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A Test of the Theory of Planned Behaviour and an Implementation Intentions Intervention for Condom Use Behaviours among Men Who Have Sex with Men

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A thesis submitted in partial fulfilment of the requirements for the Doctorate of Clinical Psychology / Master of Science Degree

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Statement of Originality

This thesis is submitted to the University of Sydney in fulfilment of the requirements for the Degree of Doctor of Clinical Psychology / Master of Science. The work contained within this thesis, is to the best of my knowledge, original except where I have acknowledged otherwise in the text. I hereby declare that I have not submitted this material, either in full or in part, for a degree at this or any other institution.

Benjamin J. Andrew

Date: 13 July 2015
Abstract

Despite many years of promotion of safe sex practices, men who have sex with men continue to be vastly over-represented in new HIV diagnoses and infection rates continue (Sullivan et al., 2009). This has been attributed to a reduction in condom use associated with the reduced disease burden and reduced infectivity resulting from antiretroviral therapy uptake. Theories of health behaviour may assist in understanding the processes involved in condom use among MSM. The aims of this study are to test the utility of the Theory of Planned Behaviour (TPB; Ajzen, 1991) in explaining condom use among MSM, and the utility of an implementation intentions intervention in increasing condom use. These aims were achieved through the following phases; demonstration of the utility of the TPB as a predictive model of condom use among MSM based on a meta-analytic review of the literature; the conduct of a cross-sectional online study to assess the TPB construct associations when assessing condom preparatory, and use behaviours among MSM; and the conduct of an implementation intentions intervention which was assessed over a three month period. The meta-analysis revealed moderate to strong effect sizes between all purported TPB construct relationships, indicating that it is an appropriate model. 56The cross-sectional study (N=81) found that the TPB was able to explain intention and behaviour for a number of condom behaviours, in particular condom use, but was subject to low power. The intervention study (N=28) was also underpowered, and interaction effects of time and condition on condom use and main effects of time and condition on condom use were non-significant. The findings of all three studies are discussed in terms of implications for research and theory,
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Chapter 1: Introduction

HIV

Human immunodeficiency virus (HIV) infection is an incurable, complex condition which can lead to acquired immune deficiency syndrome (AIDS), a syndrome in humans causing progressive failure of the immune system increasing vulnerability to life-threatening opportunistic infections, cancers and death (Douek, Roederer, & Koup, 2009; Kull, 2010; Weiss, 1993). HIV is transmitted via the transfer of blood, semen, vaginal fluid, pre-ejaculate, or breast milk. HIV has become pandemic since the first officially related death in 1981. Unlike the outbreaks of other infectious diseases (e.g., Ebola, H5N1 influenza), HIV is not self-limiting and infection rates continue to increase in many contexts (Kirby Institute, 2013; Weiss, 2003). HIV/AIDS is the leading cause of death in Africa, where the financial and educational restrictions imposed by poverty mean that treatment availability is limited, and the global death toll over the 2000-2011 period ranked HIV/AIDS as the sixth leading cause of death in the world (World Health Organisation, 2013) remaining one of the world’s most serious infectious diseases (Biswas, 2012; Kull, 2010).

Epidemiological studies estimate that there have been 36 million deaths from AIDS since 1981 and that there are approximately 35.3 million people currently living with HIV globally (World Health Organisation, 2014). Of those living with HIV, 95% are in low-middle income countries and sub-Saharan Africa remains most heavily affected, comprising 75% of new infections globally (Biswas, 2012). Recent studies of HIV in sub-Saharan Africa frequently estimate prevalence to be between 10% and
30% with women over-represented among people with HIV (Gómez-Olivé et al., 2013; United Nations, 2013; Welz et al., 2007).

**HIV and MSM**

The prevalence of HIV in high income countries such as the U.S.A, Australia, and the United Kingdom is significantly lower than in low-middle income countries, with prevalence rates estimated at less than 1% of the population (Centers for Disease Control and Prevention, 2013; European Centre for Disease Prevention and Control/WHO Regional Office for Europe, 2013). Unlike in Sub-Saharan Africa, where HIV is transmitted primarily through heterosexual sexual contact, North America, Western Europe, and Australian studies have found that men who have sex with men (MSM) are vastly over-represented in HIV prevalence (Beyrer et al., 2012; McAllister et al., 2008; Oster, 2012; Prejean et al., 2011; Sullivan et al., 2009; World Health Organisation, 2014). Estimates from the United States in 2010 found that MSM comprised 63% of all people with HIV and 78% of new infections among men despite only comprising 4% of the male population (Centers for Disease Control and Prevention, 2013). Data from Western Europe indicate increases in infection rates in both heterosexual and MSM populations, with heterosexuals comprising 35.3% of HIV diagnoses and MSM 41.7% in 2012 (European Centre for Disease Prevention and Control/WHO Regional Office for Europe, 2013). European Centre for Disease Prevention and Control/WHO Regional Office for Europe (2013) data also show an 11% increase in rates of infection among MSM between 2006 and 2012 across the European Union / European Economic Area. In Australia the data also indicate a significant over-representation of MSM in HIV infection, where over the 2008-2012 period, MSM comprised 85% of newly acquired HIV infections (Kirby
Institute, 2013). Despite overall HIV epidemic trends in most high income countries declining, between 2007-2011 HIV incidence among MSM indicated sustained and/or increasing epidemic patterns in both high and low income countries (Beyrer et al., 2012) and research has observed increasing engagement in unsafe sexual practices among MSM (Kalichman et al., 2007; Zablotska, Kippax, Grulich, Holt, & Prestage, 2011).

**HIV Prevention**

Initially driven by community advocacy, Australia’s public health, government, and community efforts to promote HIV risk reduction methods in the mid-1980s contributed to significant declines in the rate of new infections (Bowtell, 2005). Australia gained international recognition for its effective response to the HIV epidemic during the 1980s and 1990s, as implemented through partnerships between government, non-government organisations, health professionals and affected communities (Guy et al., 2007). Rapid community and public health campaigns promoting HIV infection intervention methods such as condom use and needle exchange programs saw new HIV infections decrease from the late 1980s to the mid-1990s (Bowtell, 2005; Kirby Institute, 2013). Key programs implemented in the management of HIV/AIDS in Australia, included: advocacy of the adoption of safer sexual behaviours, particularly the use of condoms; increased availability of condoms and targeted safe sex messages; the development of an enabling political environment that encouraged various marginalised groups (e.g., sex workers and injecting drug users) to take part in the national response; elimination of certain legislative barriers to make effective education and action possible (e.g. laws preventing discrimination on the grounds of sexuality or HIV status); preventive
education campaigns directed at high risk groups such as MSM as well as the general public; access to free and anonymous HIV testing; subsidised access to the antiretroviral treatment (ART) initially used to manage HIV (AZT) and medications subsequent to AZT (Bowtell, 2005).

Despite initial success, HIV infection rates have consistently increased since 1999 to current levels which are roughly equivalent to those of 1992-1993 (Kirby Institute, 2013). In Australia, as in North America and Western Europe, these observed increases in HIV infection rates roughly coincide with the widespread introduction of highly active ART to treat the infection in 1996 (Palella et al., 1998; Palmisano & Vella, 2011). Where HIV was previously considered a terminal condition, the improvements in treatment since its introduction in the 1990s have meant that HIV has become a chronic condition with a significantly improved life expectancy and reduced infectivity (Merlin et al., 2012). However, despite significant prognostic improvements, both short and long term health complications may arise from both the disease and medication, which include gastrointestinal and central nervous system toxicities, cardio metabolic abnormalities, neurocognitive impairment, frailty, opportunistic infection and increased risk of malignant cancers (Hawkins, 2010; Kull, 2010; Merlin et al., 2012) resulting in potentially adverse consequences for quality of life. In addition to the physical complications associated with HIV and ART, the social and political history of the disease brings to attention the stigma associated with the disease and the communities that are predominantly affected by it, such as MSM which is still present today (Kull, 2010; Sullivan et al., 2009).

The observed decline in condom use particularly among MSM appears to be responsible for continuing HIV infections since the introduction of effective HIV
treatment (Kalichman et al., 2007; Osmond, Pollack, Paul, & Catania, 2007; Ven, Prestage, French, Knox, & Kippax, 1998; Zablotska et al., 2011). It is largely assumed that the reduction in disease burden coupled with a complex assessment of risk is responsible for this (Beyrer, 2008; Slavin, Richters, & Kippax, 2004). The vast over-representation of MSM in HIV infections is likely explained by the high probability of disease transmission per act, and per partner, in receptive anal intercourse, and unprotected anal sex is a significant driver of the epidemic (Beyrer et al., 2012; Xiridou, Geskus, de Wit, Coutinho, & Kretzschmar, 2004). A number of factors associated with the reduction in condom use have been identified, including increased use of both licit and illicit drugs that are associated with increased sexual activity (Prestage, Jin, et al., 2009); fatigue regarding public health HIV campaigns and increases in rejection of safe sex (Bowtell, 2005); a reduction in the coverage of HIV issues by the media (Bowtell, 2005); and the use of risk reduction strategies among MSM aimed at decreasing the likelihood of transmission when engaging in unprotected sex (Parsons et al., 2005; Wilson et al., 2010).

**HIV Risk Reduction**

Descriptive research in Australia indicates that sexual behaviours and beliefs regarding HIV transmission routes have changed as HIV treatments have become more effective (Begley, Chan, Jeganathan, Batterham, & Smith, 2008; Mao et al., 2006; Prestage, Mao, et al., 2009). In assessing transmission risk, beliefs about HIV blood plasma viral load, such that undetectable viral load may be seen as having low/no transmission risk, and ART uptake, such that ART treatment leads to the belief that blood plasma viral load will be low and therefore the risk of transmission is
also low, have been associated with increases in unsafe sex practices (Begley, Chan, Jeganathan, Batterham, & Smith, 2009).

Serosorting, in which individuals have sex with partners of the same HIV status has been increasing among MSM (Wilson et al., 2010). The effectiveness of this strategy depends upon population specific parameters (e.g., number of sexual partners and rate of unprotected anal sex), and most importantly, the prevalence and frequency of HIV-testing and undiagnosed HIV infections within the population. Mathematical modeling of the relative risk associated with serosorting suggests that it unlikely to be beneficial and increases the risk of transmission in most MSM contexts (Wilson et al., 2010). Similarly, other HIV risk reduction methods, such as strategic positioning (adopting the insertive or receptive position that minimizes HIV infection risk), relying on undetectable viral load, and withdrawal before ejaculation, have also been reported among MSM as methods of reducing HIV transmission while engaging in unprotected anal sex (Begley et al., 2008; Chan, Begley, & Smith, 2009; Prestage, Jin, Grulich, de Wit, & Zablotska, 2012).

More recently, research has indicated that ART may have some influence in reducing community viral load at a population level when used as treatment as prevention for HIV or as a prophylactic medication. Treatment as prevention aims to reduce the viral loads of HIV-infected individuals to non-detectable levels and therefore reduce the likelihood of onward transmission, whereas pre-exposure prophylaxis (PreP) aims to reduce the likelihood of at-risk HIV negative individuals becoming infected (Das et al., 2010; Montaner et al., 2006; World Health Organisation, 2014). In attempting to reduce the viral load within the community, the New South Wales Government is currently promoting ART as a form of intervention,
attempting to increase the frequency and ease of HIV testing, and encouraging early and maintained ART uptake for those that are infected (NSW Ministry of Health, 2012). While prevention strategies that reduce biological transmission, such as ART, offer a potential means for reducing the expanding HIV epidemic in MSM, these strategies may contribute to increases in condom abstinence (Beyrer et al., 2012).

ART as prevention is susceptible to the same barriers as behavioural interventions in reducing HIV transmission, including sufficient coverage, intensity and comprehensiveness, and the utilisation of ART as a preventive strategy at the population level may be to the detriment of consistent condom use, an already proven risk reduction strategy (de Wit & Adam, 2014). Indeed, a meta-analytic assessment of empirical and mathematic modelling studies that investigate risk compensation in response to biomedical/nonbehavioural HIV prevention strategies suggested that such strategies may come at the cost of increased sexual risk (Eaton & Kalichman, 2007). The literature addressing risk compensation in regard to biomedical interventions largely conclude that behavioural approaches, such as condom use, remain an essential component in HIV intervention among MSM populations (de Wit & Adam, 2014).

However, those behaviours that place individuals at risk of HIV-infection, and the psychological factors that may explain such behaviour, take place in the context of interpersonal relationships which pose many cultural, social, and psychological barriers to halting the epidemic (DiClemente & Peterson, 1994). Therefore, the complexities involved in sexual decision making are better understood in terms of multiple influences and the various interactions arising from such influences, which require consideration in the development and implementation of interventions aimed
at reducing sexual-risk taking (DiClemente & Peterson, 1994). Theoretically based studies that identify the variables involved in those social processes regarding condom use and consequent behaviour among MSM have been helpful in understanding the factors important to behavioural change, and in examining the utility of interventions based on this information (de Wit & Adam, 2014; Webb, Joseph, Yardley, & Michie, 2010). Research examining four theoretical models that encompass most of the variables considered in the psychology of health behaviour and their relationships to safe-sex behaviours are discussed in the following section.

**Models of health behaviour**

Psychological models of health behaviour are comprised of social-cognitive variables that are useful in providing a basis with which to understand the processes involved in condom use behaviours. Understanding such processes is essential in developing interventions that encourage the adoption and maintenance of condom use practices, and further reduce the negative health and psychological consequences of HIV (Conner & Norman, 2005). Substantial overlap between the factors identified as significant has been found between a number of health behaviour models (Conner & Norman, 2005).

Four major models that have been used to examine condom use behaviours and that include the social-cognitive variables frequently used to understand condom use behaviours have been selected for discussion within this literature review, namely, the health belief model (Rosenstock, 1974), the social cognitive model (Bandura, 1977, 2000), protection motivation theory (Rogers, 1975), and the theory of planned behaviour (Ajzen, 1991).
The health belief model

The health belief model (HBM; Rosenstock, 1974) attempts to explain health behaviour via individuals’ health related beliefs. The HBM proposes that it is individuals’ perceptions of four variables that explain behaviour, which are (1) the perceived susceptibility, or probability of experiencing a health issue, (2) the perceived severity of the issue should it be experienced, (3) the perceived benefits of acting to prevent the health issue occurring, and (4) the perceived barriers, or costs to such action (Rosenstock, 1974). The health belief model assumes that the higher an individual’s perceived susceptibility, perceived severity, perceived benefits, and the lower the perceived barriers, the higher the probability an individual has of enacting the health behaviour. An illustration of the HBM is displayed in Figure 1 below.

Figure 1. The Health Belief Model (Rosentock, 1975; in Conner and Norman, 2005)
A meta-analytic review of 18 studies conducted by Carpenter (2010) assessed the ability of the HBM to predict behaviour longitudinally. Effect size \( r \) estimates ranged from 0.05 for susceptibility and 0.30 for barriers. Thus the variance accounted for ranged between 0.025% and 9% providing limited support for the model. Additionally, the Carpenter (2010) review only included one study examining condom use behaviour.

In a review of research examining HBM constructs and safe-sex behaviour prior to the introduction of widespread ART availability, Rosenstock, Strecher, and Becker (1994) were unable to find studies that examined the utility of the HBM in predicting AIDS-preventive behaviour as a whole model, but rather found that constructs in the model were treated separately. Consequently, the review was unable to assess the predictive utility of the full HBM as it related to HIV/AIDS (Rosenstock et al., 1994). It is of note that many studies still fail to test the HBM in its entirety but rather attempt to examine or manipulate selected constructs, and inconsistent data regarding support for construct relationships are relatively common (Adekeye & Adeusi, 2011; Macintyre, Rutenberg, Brown, & Karim, 2004; Tenkorang, 2013). Rosenstock et al. (1994) also suggested that the processes involved in an individual’s assessment of disease severity and susceptibility in relation to HIV may be irrelevant as AIDS was always evaluated as a very severe disease. This suggestion has been supported by a number of studies since this date of the Rosenstock et al. (1994) review in relation to actual condom use, including those that examine the HBM as a whole model (Lin, Simoni, & Zemon, 2005; Volk & Koopman, 2001; Winfield & Whaley, 2002; Zak-Place & Stern, 2004).
In an experimental manipulation of the core constructs of the HBM and another model of health behaviour, the Theory of Planned Behaviour (TPB, Ajzen, 1991) discussed below, Montanaro and Bryan (2014) found that the TPB was a far superior model in explaining condom use intentions, condom purchasing, condom carrying, and talking to a sexual partner about using condoms, when compared to the HBM. This study found that the TPB explained 32.8% of the variance in condom use behaviour at baseline, while the HBM explained only 1.6%.

A review of HBM based interventions by Abraham and Sheeran (2005) provided some evidence of behaviour change post-intervention with 13 of the 17 included studies reporting desired behavioural change. Included among the effective interventions were studies of interventions promoting safer sexual practices among a population of MSM in Puerto Rico (Toro-Alfonso, Varas-Diaz, & Andujar-Bello, 2002) and condom use among low-cost sex workers in Indonesia (Ford et al., 1996). However, Abraham and Sheeran (2005) acknowledged that as the studies were not selected with methodological rigour in mind (e.g. some studies, including that of the Puerto Rican MSM, failed to include control groups), any claims regarding the efficacy of the interventions must be treated with caution.

Evidence suggesting that the HBM is an inappropriate model for condom use was provided in a review of the major theoretical assumptions regarding behaviour change of different HIV preventive strategies (Albarracin et al., 2005). This review concluded that the HBM incorporates psychological variables that are influential in behavioural change. However, the review also found that, despite positive associations between perceived threat and behaviour change, threat inducing
information had no positive behavioural effects; the most distinctive prediction of the HBM was disconfirmed (Albarracin et al., 2005).

Although the HBM contains variables relevant to condom use, the utility of the model to explain and create interventions for condom use is limited; the lack of evidence for strong associations between the HBM constructs, and the lack of support for the HBM in explaining HIV-risk behaviours indicate that the HBM is not an appropriate model for describing condom use behaviour.

**Social cognitive theory**

Social Cognitive Theory (SCT; Bandura, 1977) proposes that self-efficacy is the main determinant of behaviour. Self-efficacy is defined as an individual’s belief regarding his/her capacity to perform a behaviour that is necessary in order to achieve a goal, and the perceived probability of his/her ability to overcome any barriers encountered (McAlister, Perry, & Parcel, 2008). That is, self-efficacy is not concerned with the skills an individual has, but with the judgments that person has regarding what they can do with the skills they possess (Bandura, 2002). SCT proposes that self-efficacy influences behaviour directly and indirectly via an individual’s outcome expectancies, behavioural goal setting, and perceptions of the facilitators and impediments to behaviour. Outcome expectancies are defined as the beliefs regarding the anticipated value of the possible consequences of performing a given behaviour, and the value imparted upon such outcomes. Goals are thought to be the most proximal determinant of behaviour, although goal setting is not sufficient to ensure behaviour change; therefore self-efficacy is included as a direct predictor of behaviour as seen in Figure 2. According to SCT, self-efficacy determines behaviour via a number of processes, namely (1) goal selection, (2) whether or not
instrumental actions are initiated, (3) the amount of effort applied, and (4) the length of time that an action will be sustained in difficult circumstances.

Figure 2. Social Cognitive Theory (Bandura, 2000)

Compared to those with low self-efficacy, self-efficacious individuals select more challenging and ambitious goals, invest more effort, and display greater persistence in achieving their goals (DeVellis & DeVellis, 2000). Self-efficacy also exerts influence over the effective use of cognitive resources in identifying obstacles and searching for solutions when they arise (Maddux & Lewis, 1995).

SCT suggests that self-efficacy may be enhanced via four main methods (Bandura, 1977). Firstly, personal accomplishment or mastery may enhance self-efficacy beliefs, as such achievements may be attributed internally and behaviours
may be repeated, therefore improving self-confidence. Secondly, self-efficacy may be enhanced through vicarious experiences, such that where an individual witnesses a “model person” successfully master a difficult behaviour, that individual’s self-efficacy regarding the behaviour may increase self-efficacy via processes of social comparison. Thirdly, verbal persuasion from significant others (e.g., a professional or a partner) may enhance self-efficacy via a supportive statement. Emotional arousal is the final source of influence, such that an individual may feel capable of mastering a particular behaviour when they do not experience any apprehension prior to behavioural engagement. In identifying the sources of self-efficacy, SCT effectively provides identified targets for intervention and behaviour change (Luszczynska & Schwarzer, 2005).

Regarding self-efficacy, a meta-analytic review of 56 studies published between 1981 and 1989 concluded that ratings of self-efficacy were consistently associated with health-related outcomes across a variety of health behaviours (Holden, 1991). Both adjusted and unadjusted effect sizes were significant across studies (0.26 and 0.33 respectively) and explained between 6.7% and 10.8% of the variance in health related outcomes. However in addition to acknowledging the relatively small amount of variance explained by self-efficacy, Holden (1991) pointed out that authors frequently failed to report the magnitudes of non-significant relationships meaning that the review was required to estimate the magnitudes of these relationships, which may have limited the validity of the review’s conclusions. In addition, the review did not include any studies evaluating the influence of self-efficacy on condom use. More recently, the evaluation of SCT as a whole model has proven problematic. There is significant inconsistency in the way the theory is
operationalised in the prediction of behaviour, and the majority of research that claims to test SCT only includes measures of perceived self-efficacy and outcome expectancies, therefore not testing the model as a whole (Luszczynska & Schwarzer, 2005).

SCT contains variables that are important to health behaviour change. However, the conceptual differences between studies using aspects of SCT, and the failure of many studies to include all of the constructs in the model, means that there is limited evidence to support the use of SCT to explain and create interventions for condom use behaviours. Additionally, while self-efficacy appears to be an important determinant of condom use, self-efficacy has been incorporated into other models that have been examined in their entirety and shown predictive utility (Luszczynska & Schwarzer, 2005).

**Protection motivation theory**

Protection motivation theory (PMT; Rogers, 1975) was originally created to understand the processes involved in fear appeals. A fear appeal is a persuasive message with the aim of inspiring fear in order to direct behaviour through the threat of imminent harm (Maddux & Rogers, 1983). Fear appeals present a serious risk, suggest potential vulnerability to the risk, and then provide a recommendation for protective action (de Hoog, Stroebe, & de Wit, 2005). PMT proposes that protection motivation (the intention to perform a recommended health behaviour in response to a health threat) is the best predictor of behaviour. Protection motivation is usually equated with behavioural intention and thought to direct and maintain protective behaviours (Norman, Boer, & Seydel, 2005).
PMT suggests that protection motivation arises directly from two independent cognitive appraisal processes, *threat appraisals* and *coping appraisals*, that are employed in response to fear appeals. Threat appraisal entails an evaluation of the source of the threat and encompasses factors that aim to decrease the likelihood of maladaptive responses to the threat, such as avoidance. The more severe an individual’s perception of a threat is, and the greater their perceived vulnerability to the threat, the less likely an individual will respond to the threat in a maladaptive way and the more motivated the individual will be to engage in protective behaviours. However, intrinsic rewards, such as pleasure, and external rewards, such as social approval, regarding engaging in maladaptive behaviour may increase the likelihood of a maladaptive response.

Coping appraisal entails an evaluation of the coping responses available to an individual to manage the threat, and encompasses factors that may increase the likelihood of an adaptive response. Both response efficacy (the belief that a recommended behaviour will effectively reduce threat) and self-efficacy (the belief in one’s capability to perform the recommended behaviour) serve to increase the likelihood of an adaptive response. However, there may be a number of response barriers or costs (e.g., resource availability) that serve to inhibit adaptive responses. An illustration of PMT is provided in Figure 3.
In a meta-analytic review of PMT across 65 studies (including 6 studies regarding AIDS preventive behaviours), Floyd, Prentice-Dunn, and Rogers (2000) found significant effects for all PMT components. The effect sizes ($d_+$) of threat appraisal variables were in the medium range; 0.41 for threat vulnerability and 0.39 for threat severity, and in the medium to large range for the coping appraisal variables; 0.54 for response efficacy, and 0.88 for self-efficacy, this being the largest effect size. Further analyses comparing the performance of PMT for different kinds of behaviours indicated that coping appraisals may be especially influential where HIV prevention is concerned with the HIV-prevention coping variables robustly associated with adaptive behaviours ($d_+ = 0.65$). The pattern of results was largely consistent with a more detailed meta-analysis of PMT studies by Milne, Sheeran, and Orbell (2000). The inclusion criteria employed by the Milne et al. (2000) review only extended to empirical tests of PMT to health-related intentions, cross-sectional behaviour or future behaviour. The review also found significant effects for all PMT

Figure 3. Protection Motivation Theory (Rogers, 1983, in Norman, Boer, & Seydel, 2005)
components in the small to large range, with larger effects for measures of cross-sectional behaviour when compared to measures of future behaviour.

An unpublished meta-analysis conducted by Farin (1994, cited in Norman, Boer, & Seydel, 2005) examining PMT and HIV-protective behaviours concluded that self-efficacy and response efficacy were the best correlates of HIV-protective behaviour, but only explained very small amounts of variance (2.2% and 1.7% respectively). Perceived severity emerged as a weak predictor and the results for perceived vulnerability were associated with increased maladaptive responding and were therefore in conflict with the assumptions of PMT.

In reviewing the major theoretical assumptions regarding behaviour change of different preventive strategies among HIV-prevention interventions Albarracin et al. (2005) concluded that those that attempted to induce fear of HIV (fear appeals) were the least effective. The authors found that the positive effects of threat appraisal and coping that PMT predicts were not supported when examining the relationships between threat-inducing persuasive messages and strategies (e.g., condom use skills training, behavioural skills arguments) aimed at increasing adaptive responding. In addition, threat-inducing arguments were ineffective for all examined populations and intervention contexts (Albarracin et al., 2005).

In conclusion, reviews of PMT find that of the PMT constructs, self-efficacy exerts the most control over health behaviour, while the other constructs are less influential. As self-efficacy is included in most models of health behaviour (Luszczynska & Schwarzer, 2005), it is questionable if other aspects of PMT add any further utility to predicting health behaviour over that of other models. In addition, where HIV-prevention behaviour is concerned, PMT appears to be of limited
predictive utility. Perhaps most significantly, interventions employing fear appeals, on which PMT is based, are ineffective. Taken together, these findings indicate PMT is not an appropriate model for understanding condom use behaviour.

**The theory of planned behaviour**

The theory of planned behaviour (TPB; Ajzen, 1991) suggests that a person’s intention to perform a behaviour is the best predictor of behavioural performance (Sheeran & Orbell, 2000). The TPB proposes that there are three immediate determinants of intention, namely (1) the individual’s *attitude* to the behaviour in question, (2) *subjective norm*, the perceived support from significant others to perform the behaviour, and (3) *perceived behavioural control* (PBC), the individual’s perceptions of the ease or difficulty of performing the behaviour. PBC is also thought to contribute its own unique variance to behaviour, as the effort expended in carrying out a specified behaviour is thought to increase with PBC, and as such, PBC may also be used as a proxy for actual behavioural control. This is consistent with the direct influence of self-efficacy on behaviour in social cognitive theory (Bandura, 1977) to which PBC is seen to be synonymous (Ajzen, 1991; Luszczynska & Schwarzer, 2005).

The TPB proposes three mediation hypotheses. Firstly, attitude and subjective norm effects on behaviour are thought to be fully mediated by intention, while those of PBC are partially mediated. Secondly, the effects of outcome beliefs (beliefs regarding the consequences of a behaviour), normative beliefs (perceptions of social normative pressures), and control beliefs (beliefs regarding the presence of factors that facilitate or impede behavioural performance), on intention are thought to be mediated via attitude, subjective norm, and PBC. Lastly, the influence of all other
biological, social, environmental, economic, medical and cultural effects are assumed to be fully mediated by the TPB (known as the sufficiency assumption; Ajzen, 1985). The TPB is shown in Figure 4.

![The Theory of Planned Behaviour](image)

*Figure 4. The Theory of Planned Behaviour (Ajzen, 1991, in Brosseau & Li, 2005)*

The TPB has been utilised widely in the field of health behaviour research, where the majority of studies use correlational frameworks to assess associations between TPB constructs and behaviour (Kline, 2000; Noar & Zimmerman, 2005). A recent meta-analytic review of 237 TPB studies that used prospective behavioural measures found that the model accounted for 19.3% of the variance in a range of
health behaviours with intention being the strongest predictor of behaviour (McEachan, Conner, Taylor, & Lawton, 2011). The authors also found that the predictive utility of the TPB was stronger the more temporarily proximal the behavioural measures. The review included 16 data sets regarding condom preparatory and condom use behaviours.

Studies that experimentally test the assumptions of the TPB have been less common (Kline, 2000). A meta-analytic review conducted by Hardeman et al. (2002) assessing 30 studies (three of which involved condom use) explicitly applying the TPB in behaviour change interventions found that the TPB was mostly commonly used to measure process and outcome variables and to predict intention and behaviour, and was less commonly used in the development of the intervention. The authors also noted that studies that reported data on the mediation of intention and/or behaviour change by TPB components were sparse, and concluded that further well-designed TPB-based intervention studies are required before more conclusive statements regarding the usefulness of the theory can be made. It would appear that more experimental tests of the TPB are necessary for a better understanding of TPB-based interventions (Kline, 2000).

A meta-analytic review of the literature conducted by Albarracin, Johnson, Fishbein, and Muellerleile (2001) examined the utility of both the TPB and the Theory of Reasoned Action’s (TRA; Fishbein, 1979, the model on which the TPB was based) in explaining condom use. The review synthesised 96 data sets containing relationships between each theory’s key variables and the studies’ behaviours, and found significant relationships between all variables in the medium to large range, with the exception of the PBC-behaviour relationship, which was not significant. The
authors also found that the strength of the associations was moderated by the type of behavioural measure used, with cross-sectional measures resulting in stronger association than longitudinal measures. It is of note that the review conducted by Albarracin et al. (2001) only included studies published prior to June 1996, the year in which ART for the treatment of HIV became widespread, and included a wide variety of populations.

Selection of a theoretical framework

Theory-based behaviour change interventions have been found to be more effective than interventions that lack a theoretical basis (Webb et al., 2010). Therefore an essential part of selecting an intervention is to first select a theoretical framework which is appropriate to the target behaviour. In comparing the models discussed, the TPB accounts for the most variance in condom use and therefore appears to be the most likely model with which to explain condom use among MSM.

In considering length of time since the Albarracin et al. (2001) review, the now widespread use of ART which was not available to the participants included in this review, and the lack of a review of the TPB literature specific to condom use among MSM, a review of the TPB literature specific to MSM was deemed necessary to provide further support for its utilisation. The review, conducted in September 2014 has been submitted for review for publication and is presented in chapter 2.

Abstract

**Objective**: The aim of this meta-analysis was to explore whether the constructs in the Theory of Planned Behaviour (i.e., attitude, subjective norm, perceived behavioural control, and intention) determine condom use behaviour among men who have sex with men (MSM).

**Methods**: Electronic databases were searched for studies that used the TPB and measured MSM condom use. Correlations from the included articles were meta-analysed using a random effects model.

**Results**: The effect sizes for the TPB variables were as follows; attitude-intention, 0.43; subjective norm-intention, 0.34; perceived behavioural control-intention, 0.52; perceived behavioural control-behaviour, 0.27; and intention-behaviour, 0.38. A moderation analysis indicated that the type of behavioural measure used (retrospective versus prospective) did not moderate the intention-behaviour relationship.

**Conclusion**: The medium to large effect sizes of the relationships between the constructs in the TPB, including those between condom use behaviour measures, suggest robust associations between the TPB constructs when assessing condom use behaviour among MSM. However, as only 8 studies were suitable for meta-analysis, more predictive studies are necessary to clarify the moderating factors involved in condom use among MSM.

Keywords: Theory of Planned Behaviour, condom, meta-analysis, MSM.
Introduction

The prevalence of HIV in most developed countries is estimated at less than 1% of the population, where HIV transmission occurs primarily through sexual contact between men (Centers for Disease Control and Prevention, 2013; European Centre for Disease Prevention and Control/WHO Regional Office for Europe, 2013). Studies in North America, Western Europe, and Australia have found that men who have sex with men (MSM) continue to be disproportionately affected by HIV (Centers for Disease Control and Prevention, 2013; European Centre for Disease Prevention and Control/WHO Regional Office for Europe, 2013; Kirby Institute, 2013; Prejean et al., 2011). HIV diagnoses among MSM have increased in most Western countries since 2000 (Sullivan et al., 2009) and recent data indicate stable or increasing trends in HIV infection trends among MSM in these areas (Centers for Disease Control and Prevention, 2015; Kirby Institute, 2013; Sullivan, Jones, & Baral, 2014). United States estimates in 2010 found that MSM comprised 63% of total number of HIV diagnoses and 78% of new infections among males, despite only comprising 4% of the male population (Centers for Disease Control and Prevention, 2013). Over the period 2007-2011 HIV incidence among MSM indicated sustained epidemic patterns, where data was available, with no evidence of decline (Beyrer et al., 2012).

In the past two decades HIV prevention and intervention has diversified to include medication-based methods. Methods include; post-exposure prophylaxis (PEP), pre-exposure prophylaxis (PreP) which offer methods other than (or as an adjunct to) condoms with which to protect oneself from HIV, and treatment as prevention (TasP) with anti-retroviral therapies for those already infected, to reduce viral load to undetectable levels and reduce the likelihood of onward transmission (de Wit &
Adam, 2014; World Health Organisation, 2014). The introduction of such methods has meant that a variety of HIV prevention strategies in addition to condom use are becoming increasingly known and offered to MSM, and likely influence population-level dynamics in regard to condom use behaviour as they are introduced, and possibly come at the cost of consistent condom use (de Wit & Adam, 2014).

Despite significant community and public sector condom use promotion, and increases in the availability of condoms, studies commonly report inconsistent condom use among MSM (e.g., Bruce, Harper, & Suleta, 2013; Grov, 2012; Grov, Rendina, Ventuneac, & Parsons, 2013; Rosenberger et al., 2012). Consistent condom use would aid in curbing HIV infection rates among MSM and the need for effective interventions that promote condom use are apparent. Before developing interventions aimed at increasing condom use, it is first necessary to understand the processes involved in condom use behaviour.

Theoretically based studies that identify the variables involved in the mental processes regarding condom use and consequent behaviour assist in better understanding the factors important to behavioural change, and in guiding development of interventions (de Wit & Adam, 2014). The theory of planned behaviour (TPB; Ajzen, 1991) is one of the most extensively used theories to explore social and health behaviours, and those interventions that have been based on it, albeit few, have reported some success in improving health behaviours such as condom use (Albarracin, Durantini, & Earl, 2006; Turchik & Gidycz, 2012). Despite criticisms of the TPB, such as its limited predictive validity (see Sniehotta, 2014), the TPB has accounted for relatively high levels of variance in health behaviour, and frequently more than other models (Armitage & Conner, 2001; Conner & Sparks,
The TPB proposes that it is a person’s intention to perform a behaviour that is the best predictor of behaviour. The TPB suggests that there are three immediate determinants of intention, that is, the individual’s attitude, that is their positive or negative evaluation of self-performance of the behaviour in question, (2) subjective norm (SN), the perceived support from significant others to perform the behaviour, and (3) perceived behavioural control (PBC), the perception of the ease or difficulty of performing the behaviour. PBC is also proposed to contribute its own unique variance to behaviour as it may be used as a proxy for actual behavioural control. The TPB assumes that all other variables that may be proposed to exert influence over intention and behaviour (e.g., demographics) do so via attitude, subjective norm, and perceived behavioural control.

In assessing the TPB’s utility in determining health behaviours, a recent meta-analytic review of 237 TPB studies that used prospective behavioural measures found that the model accounted for 19.3% of the variance in a range of health behaviours with intention being the strongest predictor of behaviour (McEachan et al., 2011). The meta-analysis also found that the predictive utility of the TPB was stronger the more temporarily proximal the behavioural measures were to those of attitude, SN, PBC, and intention. Of the datasets included in the review, 16 involved preparatory condom behaviours and/or condom use. However, only two of these data sets were obtained from MSM populations (de Wit, Stroebe, de Vroome, Sandfort, & Van Griensven, 2000; Godin, Savard, Kok, Fortin, & Boyer, 1996). In determining the TPB’s ability to explain condom use behaviour, Albarracin et al. (2001) synthesised 96 data sets containing relationships between the key theory of
reasoned action (the TPB’s predecessor) (Fishbein, 1979) and TPB variables. Their findings indicated significant relationships between all variables in the TRA and the TPB with the exception of the PBC-behaviour relationship, which while related to condom use, did not make a significant contribution. The authors noted that the strength of the intention-behaviour and PBC-behaviour associations were stronger with retrospectively measured behaviour than with prospectively measured behaviour. They suggested that this result inferred that while intentions appear to influence prospective behaviour, that retrospective inferences regarding past behaviour may also influence intention. Past behaviour has been found to predict future behaviour over and above intention (Sutton, 1994). Many authors suggest that past behaviour contributes its own unique variance to future behaviour and that it may do so through constructs other than intention, such as habit strength (Ajzen, 2002; Norman & Conner, 2006; Norman, Conner, & Bell, 2000; Rhodes & Courneya, 2007). Many studies, in particular those that are cross-sectional, only measure behavioural intentions, under the assumption that they are a good proxy for actual behaviour (Albarracin et al., 2005). However, meta-analyses of condom use report only partial support for this assumption, finding correlations between 0.44 and 0.46 for this relationship (Albarracin et al., 2001; Sheeran & Orbell, 1998). It is therefore of note that many cross-sectional studies use retrospective behaviour as their TPB behavioural measure, which may inflate the strength of the intention-behaviour relationship through means other than intention, while inferring that the TPB constructs measured at a time point after which the behaviour has occurred are influencing it.
It is worth noting that the Albarracin et al. (2001) review was comprised of studies published no later than June 1996, the year in which ART became widely available, and were obtained from a wide variety of populations of condom users. Prior to this date HIV was considered a terminal disease, whereas now the improvements in antiretroviral therapies (ART) have meant that HIV has become a chronic disease with a life expectancy which is significantly greater than that pre-ART (Merlin et al., 2012).

The increasing availability of ART-based HIV prevention methods have effectively altered the course and nature of HIV, and likely influence the beliefs in regard to HIV prevention and intervention, particularly among MSM, a key population at risk of HIV infection (Begley et al., 2008; Cassell, Halperin, Shelton, & Stanton, 2006; de Wit & Adam, 2014; Eaton & Kalichman, 2007). The research examining decreases in condom use in response to biomedical approaches to HIV intervention and any influence on HIV infection rates is in its relative infancy (de Wit & Adam, 2014). The literature largely agrees that the observed decreases in condom use (e.g., Kalichman et al., 2007; Osmond et al., 2007; Zablotska, Prestage, Middleton, Wilson, & Grulich, 2010) likely results in increased HIV infection, and that behavioural interventions such as condom use, remain an essential component of HIV intervention among MSM (de Wit & Adam, 2014). Despite this, there are no reviews of theory-based studies of condom use among MSM. Given the previous evidence suggesting that the TPB is the most appropriate model for assessing the processes involved in condom use (Albarracin et al., 2001), the time since the last meta-analytic review and the now widespread introduction of ART-based HIV
intervention and prevention methods since then, and the absence of a review specific to MSM, a review of the literature as it applies to the TPB is warranted.

The aim of the present meta-analysis was to:

a) Establish the relationships between the variables in the TPB, using data from studies that have assessed condom use behaviour among MSM populations specifically. That is, the relationship between intention and the constructs that are purported to determine it (i.e., attitude, SN, and PBC), the relationship between PBC and behaviour, and between intention and behaviour. As past studies and reviews have found empirical support for the TPB as a model of health behaviour, it is hypothesised that attitude, SN and PBC will be significantly associated with intention, and that both PBC and intention will be significantly associated with condom use.

b) Establish any moderating effects of the type of behavioural measure used on the intention-behaviour relationship. That is, whether using a measure of intention with a retrospective behavioural measure versus a prospective behavioural measure, influences the strength of the intention-behaviour relationship. As intentions are usually in accordance with past behaviour, it is hypothesised that the intention-behaviour relationship will be moderated by the type of behavioural measure used, such that the association with retrospective behaviour will be stronger than with prospective behaviour.
Method

Search strategy

A systematic literature search was conducted in September 2014 using the electronic databases PsychInfo, Medline, CINAHL, and Web of Science. The current search strategy used the following keywords: (Theory of Planned Behavio* or Theory of Reasoned Action or Reasoned Action Approach or TPB or intentions or Fishbein or Ajzen or Reasoned Action/ or Planned Behavio*/) and (sex* or Intercourse* or *sexual intercourse (human)/ or same sex intercourse or contraceptive devices/ or Condoms/ OR condom* OR contracepti*). The search was restricted to peer-reviewed journal articles and English language papers.

Inclusion criteria

Studies were eligible for inclusion if they provided a measure of all the variables that the TRA/TPB propose determine intention (attitudes, SN, and PBC), a measure of intention and a measure of condom use behaviour, were conducted in MSM populations, and contained appropriate statistics. As in the Albarracin et al. (2001) review, a study was considered to measure PBC if it measured the extent to which participants felt that they would use condoms if they wanted to, that condom use was their decision, and/or whether using condoms was easy or difficult.

Study selection

Following the selection of studies based on a title and abstract search, a selection of 10% of titles and 10% of abstracts were screened by a second author for the purposes of reliability. There was a high level of agreement between the
researchers on combined title and abstract screening (85%). Disagreements between the researchers were resolved through discussion between authors.

After the title and abstract screening, one researcher screened the full text of the selected papers and assessed if they met all the inclusion criteria. For the purposes of reliability, a second author screened the full text of more than 10% of the included papers which were randomly selected. The level of agreement was 100%. Reasons for exclusion were: not using the TRA/TPB, not providing a behavioural measure (e.g. measuring intention and not behaviour), not having been peer-reviewed (including dissertations and book chapters), the author being unable to provide additional data or not responding to requests for additional data, measuring “contraception” behaviour in general rather than condom use in particular, not measuring or defining constructs according to theoretical specifications, not being available in English, being a qualitative study, duplicating data, being an addendum or emendation, using the female condom, being a proposed study, and being a review. This resulted in the inclusion of 8 articles. The study selection process is shown in Figure 5.
**Data extraction**

The following characteristics of the included studies were documented: location, type of sexual behaviour (e.g., anal sex, unprotected oral and anal sex combined), partner status (e.g. casual, regular), mean age of sample, other sample...
characteristics (e.g., HIV status, ethnicity) and whether the behavioural measure was retrospective or prospective.

**Data analysis**

Correlations were the most frequently reported measure of TPB variable relationships in the included articles. Therefore, Pearson’s product-moment correlation coefficient ($r$) was used as an estimate of effect size for the meta-analysis. Authors who did not report correlations in their studies were contacted by the researchers. Where necessary, correlations were reversed so that the direction of correlations was consistent across studies. For example, when a study measured condom non-use rather than condom use. A moderation analysis was conducted to establish whether the type of behavioural measure used could moderate the effects of the intention-behaviour relationship.

**Meta-analysis**

Although a systematic search strategy was conducted to identify relevant studies, there is always a possibility that studies which should have been included were missed. Therefore, the meta-analysis was conducted with the program CMA (Biostat, 2005), using a random-effects model. This provides information about the average effects in the entire population of studies that could have been included, of which the studies actually included in the meta-analysis form a random sample. Random effects modelling assumes that there are other factors influencing results that have not been accounted for (Hedges & Vevea, 1998; Viechtbauer, 2010).
The effect size reported in this meta-analysis was the average correlation across studies, was weighted by the observed sample size ($r+$). Cohen’s (1992) guidelines were used to interpret the effect size of sample-weighted average correlations ($r+$); $r+ = .10$ was considered a small effect size, $r+ = .30$ was considered a medium effect size, and $r+ = .50$ was considered a large effect size. The effects sizes were calculated using Fisher’s $Z$ transformations. For every effect size a 95% confidence interval (CI) was calculated, and $Q$ and $I^2$ statistics were calculated to explore heterogeneity. The $Q$ statistic reflects the presence of heterogeneity and when statistically significant, has been used to describe the level of suggested heterogeneity (Higgins, Thompson, Deeks, & Altman, 2003). However, $Q$ has low power as a comprehensive test of heterogeneity, particularly when there is a small number of studies (Gavaghan, Moore, & McQuay, 2000), and $I^2$ might be consider a more accurate estimate in these instances (Higgins et al., 2003). The $I^2$ statistic describes the percentage of total variation across the included studies that is a consequence of heterogeneity, rather than chance. An $I^2$ statistic of up to 25% indicates low heterogeneity, up to 50% indicates moderate heterogeneity and 75% and higher indicates high heterogeneity (Higgins et al., 2003). A moderator analysis was conducted in a mixed-effects model. This model generates information about the extent to which moderators influence the true effect sizes.
Results

Studies selected

Eight articles met the inclusion criteria and were therefore included in the meta-analysis. A summary of the characteristics of included studies is presented as Table 10 in Appendix A. One study (de Wit et al., 2000) used the same sample for two behaviours (i.e., condom use separately for casual and regular partners), and datasets were combined to calculate a weighted average using the smallest $n$. The mean sample size of the included datasets was $N = 144$.

Study characteristics

Of the eight datasets, two used retrospective measures of condom use (Boldero, Sanitioso, & Brain, 1999; Rosario, Mahler, Hunter, & Gwadz, 1999) and six used prospective measures of condom use (de Vroome, Stroebe, Sandfort, de Wit, & Griensven, 2000; de Wit et al., 2000; Franssens, Hoppers, & Kok, 2009; Godin, Maticka-Tyndale, et al., 1996; Rye, Fisher, & Fisher, 2001; Schutz et al., 2011).

Weighted average correlations between TPB constructs and condom use

Attitude, SN, and PBC were each significantly associated with intention to use condoms, and, intention and PBC were significantly associated with condom use. The effect sizes of relationships between constructs varied from $r^+ = 0.27$ to $r^+ = 0.52$. The construct most strongly associated with intention was PBC ($r^+ = 0.52$, $p < 0.001$), followed by attitude ($r^+ = 0.43$, $p < 0.001$) and SN ($r^+ = 0.34$, $p < 0.001$). Intention was also significantly associated with behaviour ($r^+ = 0.38$, $p < 0.001$), as was PBC ($r^+ = 0.27$, $p < 0.001$).
The heterogeneity of all relationships between constructs as assessed in this meta-analysis was moderate to high; attitude-intention ($I^2 = 85.47\%$), SN-intention ($I^2 = 80.34\%$), PBC-intention ($I^2 = 82.23\%$), intention-behaviour ($I^2 = 60.58\%$), and PBC-behaviour ($I^2 = 69.66\%$). An overview is shown in Table 1.

Table 1
Effect sizes of the relationships between TPB variables and condom behaviour

<table>
<thead>
<tr>
<th></th>
<th>$k$</th>
<th>$r^+$ (95% CI)</th>
<th>$p$-value</th>
<th>$Q$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Att.-Intention</td>
<td>7</td>
<td>0.426 (0.255 - 0.570)</td>
<td>&lt;.0001</td>
<td>41.30</td>
</tr>
<tr>
<td>SN-Intention</td>
<td>7</td>
<td>0.344 (0.189 - 0.482)</td>
<td>&lt;.0001</td>
<td>30.52</td>
</tr>
<tr>
<td>PBC-Intention</td>
<td>6</td>
<td>0.523 (0.380 - 0.641)</td>
<td>&lt;.0001</td>
<td>28.13</td>
</tr>
<tr>
<td>PBC-Behaviour</td>
<td>6</td>
<td>0.268 (0.111 - 0.411)</td>
<td>&lt;.0001</td>
<td>16.48</td>
</tr>
<tr>
<td>Intention-Behaviour</td>
<td>8</td>
<td>0.376 (0.244 - 0.494)</td>
<td>&lt;.0001</td>
<td>17.76</td>
</tr>
</tbody>
</table>

$k$ = number of unique data sets

$r^+$ = weighted correlations coefficient

$Q$ = between study heterogeneity expressed as Chi square

**Moderation of the intention-behaviour relationship by type of behavioural measure**

The intention-behaviour relationship for condom use among MSM was not significantly moderated by the type of behavioural measure used; for prospective measures, $r^+ = 0.4$, $p > 0.05$, and for retrospective measures, $r^+ = 0.31$, $p > .05$ ($Q = 0.27$, $p = 0.28$).
Discussion

The purpose of this meta-analysis was to determine whether the associations between the TPB constructs for condom use among MSM are as the model purports. It was assessed whether attitude, SN, and PBC were associated with intention, and whether intention and PBC were associated with condom use behaviour. Additionally, it was assessed whether the intention-behaviour relationships differed according to the nature of the behavioural measure used (retrospective versus prospective). There was a considerable degree of heterogeneity seen in the effects across studies, which was high for the TPB variables that purportedly precede intention, and moderate for those that precede behaviour. The unresolved heterogeneity may be explained by moderators that are not included in the model but given the small number of datasets included in the analysis that measured and/or reported them, meaningful moderation analyses are difficult to undertake. Nevertheless, the effects were robust. Computed effect sizes were between 0.27 and 0.52, indicating that the relationships between the constructs were moderate to strong. This suggests that the associations between the TPB constructs are sound when applied to condom use behaviour among MSM.

The type of behavioural measure used was expected to moderate the relationships between intention and behaviour such that it would be stronger for those that used retrospective condom use as a behavioural measure than those that used prospective measures. This expectation was based on research suggesting that individuals’ past behaviour is in accordance with their intentions (Ajzen, 2002). However, the only significant relationship was between perceived behavioural control
and intention which was stronger when a prospective behavioural measure was used, and therefore this hypothesis was not supported.

**Theoretical implications**

This meta-analysis shows that the purported relationships between TPB constructs regarding condom use are moderate to strong among MSM populations. These findings are largely consistent with the Albarracin et al. (2001) review, with the exception of the PBC-behaviour relationship which was found to be significant in our review and not in theirs. That the perceived behavioural control-behaviour relationship finding differed between reviews may be explained by a number of factors that distinguish the two reviews. The Albarracin et al. (2001) review included studies from among diverse populations (e.g., college students, injecting drug users, females, MSM), while we only utilised data taken from MSM populations. Different populations are subject to different biological, social, economic, medical and cultural effects, which are all hypothesised to be mediated by the TPB (Ajzen, 1985, 1991). Therefore, the relevancy and relative contributions of the TPB variables to condom behaviour likely differ between populations and across temporal contexts. As such, the data resulting from the amalgamation of populations within the Albarracin et al. (2001) which included studies published no later than June 1996, will differ to those in this review which only utilised data taken from MSM populations from 1996 to September 2014.

It is also possible that measures of PBC have improved in the time since the studies included in the Albarracin et al. (2001) were published. The Albarracin et al. (2001) review included studies ranging from 1978 to 1996, yet the TPB was only fully described in 1991 (Ajzen, 1991). The methodology, and therefore the measures of
PBC, may have become more consistent with the theoretical specifications of the TPB since this time, thus resulting in the significant PBC-intention association seen in the current meta-analysis that was not seen in the Albarracin et al. (2001) review.

Another obvious difference between the current review and the Albarracin et al. (2001) meta-analysis is that the Albarracin et al. review included studies with heterosexual women. Where heterosexual condom use is concerned, condom use may be defined as a behaviour for heterosexual men and a goal for women (Arden & Armitage, 2008). This relationship is different for MSM as condom use may be a goal, or a behaviour, or both, for either sexual partner depending on the sexual behaviours enacted on the one occasion of sex. The extent to which PBC regarding condom use is endorsed by heterosexual women may therefore differ to that of MSM (depending on sexual position) which may bear some influence on this result.

The different result for the PBC-behaviour relationship between the current review and the Albarracin et al. (2001) review might also be explained by the differing temporal contexts relevant to each review. Prior to 1996, HIV was considered a terminal illness and condom use was the most promoted method of HIV-prevention among MSM. It would seem likely that as the infection rate dropped considerably after the promotion of HIV prevention methods such as condom use that condom use skills, that is the physical act of putting a condom on, would have improved among MSM during this period. Similarly, as the health/mortality threat imposed by HIV was significantly greater at this time, and that condoms were more or less the only HIV prevention method available, it might be assumed that condom use was an expected standard of behaviour. Ajzen (1991) has argued that PBC only plays a role in predicting behaviour if it is relevant. In situations when an individual
has little or no information about the behaviour, when the necessities or resources available have altered, or when novel or unfamiliar elements enter the situation, PBC may have little to no impact on behavioural prediction (Ajzen, 1991). Assuming that condom use was an expected standard of sexual behaviour, and that condom use skills were high, PBC as it relates to condom use may have been less relevant, and this might explain why the PBC-behaviour was not significant in the Albarracin et al. (2001) review. In contrast, after 1996, with the introduction of ART-based methods of HIV prevention and intervention, there may be less agreement as to the necessity of condoms between sexual partners. As PBC subsumes many aspects of a behaviour, it is possible that post-1996, that the relevancy of PBC as it relates to condom use is now an issue of negotiation with sexual partners, rather than the physical act of putting a condom on. As condoms may not be deemed necessary to prevent HIV infection, condom use may now be more subject to negotiation than it was previously, and therefore sexual partners may have more influence in condom use decision making. Consequently PBC may be of more relevance to condom use among MSM than it was previously. This may be responsible for the significant PBC-behaviour association seen in the current meta-analysis.

The second aim of the current meta-analysis was to assess whether the behavioural measure used (retrospective or prospective) moderated the relationship between intention and behaviour. The limited predictive validity of the TPB has been criticised as a weakness of the model (Sniehotta, Presseau, & Araujo-Soares, 2014) and studies frequently fail to assess behaviour prospectively. Similarly, weaker relationships have typically been found for retrospective health behavioural measures when compared to prospective measures (McEachan et al., 2011).
However, within the current review, that all included datasets tested the whole TPB model including actual behaviour, and six of the eight included data sets measured behaviour prospectively, shows reasonable methodological strengths among the majority of these studies. This suggests that even when condom use behaviour among MSM is assessed longitudinally, that associations between the TPB constructs remain robust, as seen in the moderate-large effects sizes within this review.

Our analysis did not find that the type of the behavioural measure used (retrospective or prospective) moderated the relationship between intention and behaviour. This was surprising given the evidence suggesting that intentions are more strongly associated with retrospective behavioural measures for a variety of health behaviours, including condom use (Ko et al., 2009; Ouellette & Wood, 1998; Prabawanti, Dijkstra, Riono, & Tb, 2014; Waldo & Coates, 2000). In a meta-analysis of the prospective prediction of health behaviours with the TPB, McEachan et al. (2011) found that category of behaviour being measured was a significant moderator of the strength of construct relationships. Health risk behaviours such as safer sex, in contrast to health promoting behaviours, were relatively poorly predicted by the TPB (McEachan et al., 2011).

While our review included two studies that utilised retrospective behavioural measures, which limits its comparison with the McEachan et al. (2011) review, the majority used prospective behavioural measures and yet the TPB associations remained robust. Alike the Albarracin et al. (2001) review, the McEachan et al. (2011) also aggregated data from studies taken from diverse populations. Again, it may be that the TPB better accounts for condom use behaviour prospectively among
MSM populations than it does for aggregated populations due to the different biological, social, economic, medical and cultural effects, which are mediated by the TPB (Ajzen, 1985, 1991). However, the small number of data sets included in the current meta-analysis results in issues of statistical power, and the moderation analysis must be considered within this limitation.

Limitations and strengths

Due to the significant heterogeneity, the precision of the meta-analytic effect sizes is reduced, and the results must be considered with reference to this limitation. The small number of datasets included in the study restricts the ability to investigate moderators that may bear influence on the TPB relationships.

Another limitation of this study is that of publication bias. It is possible that all the studies that could have been included were not, and that those that were included, having been published were more likely to have positive results (Dickersin, Min, & Meinert, 1992), therefore influencing the outcome of the completed analyses.

The strength of this meta-analysis lies in the assessment of the TPB as it applies to condom use behaviour among MSM specifically. Instead of assessing the utility of the TPB in predicting an extensive range of health behaviours across broad and varied populations, this meta-analysis assesses the TPB as it applies to a specific behaviour among a specific population at heightened risk of HIV infection. In addition, this meta-analysis is temporally relevant to HIV-prevention and intervention as new methods such as ART, PreP, and PEP enter this domain.
Conclusion

The TPB has been successfully applied to a large range of health behaviours, and the findings of this review suggest that the TPB construct relationships are strong when applied to condom use among MSM. However, the moderate to high degree of heterogeneity in effect sizes across studies suggests that moderators not included in this meta-analysis influence the relationships between TPB variables. In addition, this review does not provide insight into the potential for success of TPB-based interventions to promote condom use among MSM. The small number of studies available for meta-analysis means that meaningful moderation analyses are difficult to complete, and provides a strong rationale for further predictive studies of the TPB among MSM populations. In conclusion, the results of this review indicate that the TPB construct associations for condom use behaviour among MSM are as the TPB stipulates, suggesting that it may be a helpful model with which to better understand the processes involved in condom use among MSM.
Chapter 3: A Predictive Study of the TPB and Condom Behaviours among MSM

Introduction

As discussed in chapter 1, among MSM there is significant over-representation of MSM in HIV infection (Kirby Institute, 2013; World Health Organisation, 2014), HIV infection rates remain stable or are increasing (Beyrer et al., 2012), and unsafe sexual practices are increasing (Kalichman et al., 2007; Osmond et al., 2007; Zablotska et al., 2011). Understanding the variables and processes involved in decisions regarding condom use during casual sex is important within the general population, but to an even greater extent among MSM, due to the significantly increased risk of HIV infection, and the associated health complications that arise from both the disease and the ART involved in its management, and associated psychological difficulties (Kull, 2010; Sullivan et al., 2009).

This provides a rationale for research that aims to better understand the psychological factors involved in condom use among MSM. As theory-based behaviour change interventions have been more successful than those that lack a theoretical basis (Webb et al., 2010), the selection of a theoretical framework appropriate to the behaviour in question is an essential component of intervention development. Despite this, there is currently a lack theoretically informed, multivariable studies of condom use behaviour among MSM populations (de Wit & Adam, 2014). This finding was further supported by the meta-analysis in chapter 2, which only found eight studies assessing condom use among MSM as it relates to the TPB that were suitable for analysis.
It has also been argued that the actual physical act of using a condom is a too simplistic measure to capture the variables that influence such a decision, and that other preparatory behaviours such as the purchase and storage of condoms, and the negotiation of condoms with one’s sexual partner(s) are required (Arden & Armitage, 2008; Oster, 2012; Rodriguez-Penny et al., 2013; World Health Organization, 2011). A meta-analytic review, in a heterosexual population, of the bivariate correlations between certain psychosocial variables and condom use found that accessing condoms, having condoms present, and discussing condom use were among the strongest determinants of actual condom use (Sheeran, Abraham, & Orbell, 1999). Therefore, it appears that understanding the processes involved in condom preparatory behaviours may be important to fully understand actual condom use.

Studies that consider variables that are known to effect condom use, and utilise a theoretically informed framework are therefore the most likely method with which to better understand condom use among MSM. As noted in chapter 1, and as indicated by the meta-analysis in chapter 2, the significant associations between the constructs within the TPB suggest that it is a suitable theory which to explore the psychological processes involved in condom use among MSM populations.

**The Present Study**

The purpose of the present study is to test the purported associations of the TPB constructs when examining condom use, and preparatory condom use behaviours among an MSM population. In engaging an MSM population in research, an additional opportunity to assess the ability of an intervention that has been successful in improving a number of health behaviours, implementation intentions (Gollwitzer, 1999; Gollwitzer & Sheeran, 2006), to increase condom use was
available. This intervention study was initiated as part of the current study and is included as chapter 4.

Given the evidence suggesting that the associations between the TPB are robust when evaluating condom use behaviour among MSM; for both preparatory and actual condom use behaviours, it was predicted that attitude, SN, and PBC would be significantly associated with intention, and that intention and PBC would also be significantly associated with behaviour.

**Method**

*Participants and procedure*

Flyers advertising the study and providing a link to the website were placed at four sex on premises venues located in inner Sydney, a private medical practice with a high proportion of MSM clientele (Holdsworth House Medical Practice), and two inner city sexual health centres (The Albion Centre and The Sydney Sexual Health Centre). The study was also advertised on the webpages of both sexual health centres, and snowballing occurred via advertisements of the study on Facebook, Reddit, and Twitter, and The University of Sydney Research Volunteer page. The study was also promoted via the mailing lists of Positive Life NSW (an HIV advocacy group), and University Ally Networks (University staff and student networks who advocate for lesbian, gay, bisexual, transgender, intersex, and queer persons).

Participants were recruited via opportunistic sampling over a period of 199 days. Participants self-initiated the study by either selecting the link to the study website from the above websites, or typing the website address into a browser if responding to a flyer.
Upon entering the study’s website, participants were presented with the participant information sheet and the consent form (included in Appendix C). Participants consented to taking part in the study by checking a box indicating their willingness to do so. After consenting, participants were asked to provide an email address (the participant information and consent form suggested that an email address that did not provide identifying information be used). This was necessary in order to invite participants to complete behavioural measures again at time 2, and to provide an identifier to match baseline and follow up data. After completing all measures, participants were randomly allocated to either control or intervention conditions which are described in chapter 4. All participants were invited to complete the follow up measure three months after completing the baseline measure.

Ethical approval was provided from the South Eastern Sydney Local Health District Human Research Ethics Committee before data collection commenced. All documents related to ethical approval and amendments can be found in Appendix B.

**Measures**

All measures are included in the adapted version of the ACNUD scale in Appendix C.

**Demographics**

Three questions regarding age, ethnicity, and level of education were asked to collect relevant information regarding basic participant characteristics. Education was reported as the highest level of education by forced choice between: Primary School, did not complete Secondary School, Secondary School, post-secondary non-tertiary education (e.g., TAFE), Bachelor Degree, Master Degree, or Doctoral
Degree. After data collection, education was coded into a categorical variable consisting of three groups; completed high school, post-secondary non-tertiary education, and Bachelor degree or higher degree.

Condom and sexual partner - related demographic questions

Five items assessed whether or not participants had ever engaged in the condom accessing, carrying, negotiating, use, and disposal behaviours via a forced choice question. For example: “Have you ever accessed condoms…Yes__, or, No__?” Participants were also asked to estimate the number of sexual partners that they had had in the past three months: “How many men do you think you have had anal intercourse with in the past three months?”

TPB Measures

In order to assess the TPB variables; attitude, SN, PBC, intention, and condom accessing, carrying, and use behaviours, an empirically validated scale, known as the ACNUD scale (Hancock, 2013; Hancock, Lees, & Brown, 2011) was adapted for MSM (e.g., not including the female condom) while attempting to deviate as little as possible from the original measure. The adapted ACNUD scale is included as Appendix C. The ACNUD scale was originally validated in a sample of the general population using a scale based on those variables that the TPB proposes determine intention (Hancock, 2013). The scale was developed from the extended TPB beliefs that participants initially generated in an elicitation study and therefore also includes a number of variables in addition to the TPB model as it has been described above. While the entire questionnaire was used, only the TPB constructs previously
described were used in the analyses completed in this study. The TPB variables described in the ACNUD scale were assessed on a 7-point Likert Scale with lower scores indicating lower endorsement and are outlined below. The original version of the ACNUD scale is included in Appendix D.

**Attitude:** One item was used to measure attitude for each of the ACNUD condom behaviours where participants were asked to rate the ease or difficulty of engaging in each of the five condom behaviours on a 7-point Likert scale. For example: “For me to use condoms during anal intercourse is… 1 = difficult – 7 = easy.”

**Subjective Norm:** One item was used to measure subjective norm for each of the ACNUD condom behaviours. Participants were asked to rate the degree to which they agreed or disagreed with statements regarding social support for each behaviour on a 7-point Likert scale. For example: “I feel social support in accessing condoms… 1 = strongly disagree – 7 = strongly agree.”

**Perceived Behavioural Control:** One item was used to measure PBC for each of the ACNUD behaviours. Each question asked participants to rate how much they agreed that decisions to engage in each of the ACNUD behaviours were up to them on a 7-point Likert scale. For example: “It is up to me whether or not I carry condoms in the future in case I have sex… 1 = strongly disagree – 7 = strongly agree.”

**Intention:** One question was used to measure intention for each of the five condom behaviours. Each question asked: “How much do you agree or disagree
with the following statement?" which was then followed by a statement regarding the condom behaviour in question. For example: “I intend to access condoms every time I have sex in the future…1 = strongly disagree – 7 = strongly agree.”

**Behaviour**: Behavioural definitions were provided within the ACNUD scale. For example: “Carrying condoms: This refers to actually having condoms with you when you are intending to have sex, or when you think you might have sex. Depending on where and when you have sex, this might refer to taking condoms with you in your pocket or bag to your sex partners home, to a beat, to a sex on premises venue, or to a bar or party.” For further behavioural definitions see the adapted ACNUD scale in Appendix C. A definition of a casual sex partner was also provided within the ACNUD scale: “Casual partner: Someone you did not intend to have a committed romantic or exclusive sexual relationship with. For example, this might be someone you have anonymous sex with at a beat or sex on premises venue, some one that you hook-up with occasionally, a fuck buddy, or an internet hook up. This may be someone you only meet once, or more than once.”

Sexual behaviour data are most commonly obtained via self-report. Retrospective self-report of sexual behaviour is known to be influenced by a number of factors including recall task demands and memory error related to this, the social context of the assessment, both of which may influence self-report bias (Schroder, Carey, & Vanable, 2003). While there is no sufficient way in which to measure self-reported retrospective sexual behaviour, a review by Schroder et al. (2003) suggested that accurate data regarding frequency of sexual behaviour may be reported consistently
over time frames of a minimum of three months, that anonymity likely reduces bias, and that computerisation may decrease socially desirable reporting.

A meta-analytic review of 28 studies examining the test-retest reliability of common HIV risk behaviour recall periods, found that a three month recall period produced the most reliable data for most sexual behaviours over that of one and six month periods (Napper, Fisher, Reynolds, & Johnson, 2010). The reliability of the number of sexual partners increased as the recall period length increased, perhaps reflective of increasing variability of sexual partner number reporting across longer recall periods (e.g., 30 days Vs. 3 months, Napper et al., 2010). However, accurate recall was found to decrease over longer periods (e.g., 6 months), resulting in decreasing recall reliability. Participants were therefore asked to estimate the number of times that they had, and had not, engaged in the various condom behaviours over a three month period; “Please estimate the number of times you have and have not performed the five condom behaviours in the past 3 months…

Have used condoms: ____... Have not used condoms: ____.”

A review of calendar instruments in social surveys suggest that they appear to improve retrospective data quality (Glasner & Van der Vaart, 2009). To assist with recall, participants were provided with a six-month calendar with significant dates (e.g., Christmas, Sydney Mardi Gras Parade) used as a prompt to assist with self-reporting sexual behaviour.

*The Depression, Anxiety and Stress Scale – 21 (Lovibond & Lovibond, 1995)*

A number of studies, including those involving MSM, have identified associations between negative affective states (e.g., depression, anxiety, stress) and sexual risk
behaviours such as unprotected sex, high risk oral sex, and multiple sexual partners (Bancroft et al., 2003; Brown et al., 2006; Khan et al., 2009; Lehrer, Shrier, Gortmaker, & Buka, 2006; Rosario, Schrimshaw, & Hunter, 2006). Therefore it was thought prudent to include a measure of affect to assess any moderating influence. The Depression, Anxiety, and Stress Scales -21 (DASS-21: Lovibond & Lovibond, 1995) was included in the survey to account for this. Depression, anxiety, and stress scores were calculated individually, and a total DASS-21 score was calculated as potential covariates of the TPB and behavioural variables.

Alcohol and other drug intoxication

As there is evidence that alcohol and other drugs (AOD) intoxication may be a potential covariate of HIV risk behaviour among MSM such that substance use has been associated with increased rates of unprotected anal intercourse (Baliunas, Rehm, Irving, & Shuper, 2010; Colfax et al., 2010; Colfax et al., 2004; Shuper, Joharchi, Irving, & Rehm, 2009; Stueve, O'Donnell, Duran, San Doval, & Geier, 2002) a measure of AOD intoxication was included. This took the form of one question asking participants for the number of times they had taken AOD to the point of intoxication over the previous three months; “How often have you taken alcohol or drugs to the point of intoxication in the past 3 months?”

Clinical indicators

HIV status, ART status, and viral load status have all been associated with unprotected sex (Crepaz, Hart, & Marks, 2004; Marks, Crepaz, Senterfitt, & Janssen, 2005; Pedrana, Hellard, Wilson, Guy, & Stoové, 2012). Given these associations, all
participants were asked to provide their HIV status from three categories: “HIV positive”, “HIV negative”, or “I don’t know my HIV status” via forced choice. Participants that indicated that they were HIV positive were asked three additional questions; whether they were on ART medication to treat HIV, if they knew their viral load, and if so, what the viral load was.

Data analysis

To evaluate the associations between the construct relationships described by the TPB (Ajzen, 1991), correlations and standard multiple regression analyses were completed for the predictors of intention; attitude, SN, and PBC, and the predictors of behaviour; intention and PBC. Covariates were included in the regression analyses when statistically significant.

One further regression analysis examining the TPB’s validity in predicting condom use among HIV-negative MSM with sexual partners believed to be of HIV-negative or unknown HIV status was also completed.

The proportion of instances of having engaged in a condom behaviour over all potential occasions of the behaviour in the past three months was used as the behavioural measure. This was calculated by adding the estimate of the number of times of having engaged in a behaviour in the past three months to the estimate of the number of times of having not engaged in the behaviour in the past three months, and then dividing the sum of the two estimates by the number of times a participant reported having engaged in the behaviour.

In evaluating the data regarding condom negotiation, it became apparent that it was possible to endorse intentions highly but not have engaged in condom negotiation, not due to intention failure, but due to a lack of opportunity. A participant
may have intended to negotiate condom use but it may not have been necessary for a number of reasons, for example; as it is standard behaviour with a particular sex partner, the sex partner may have initiated negotiation which the participant may have then consented to, or the opportunity for negotiation may have simply not arisen (e.g., due to geographical location, injury, illness). This may have resulted in a loss of variance between intention and behaviour. Similar to condom negotiation, it became apparent that the definition of condom disposal had the potential to influence the data in a misleading manner. It is possible that participants may have intended to dispose of condoms but that the opportunity to do so did not occur because the partner disposed of the condom (rather than the participant himself), or because condoms were not used. Therefore the data regarding condom negotiation and condom disposal could not be meaningfully analysed and were removed from further analyses.

Results

Sample characteristics

A total of 81 respondents with a mean age of 28 (range 18-63) completed the questionnaire. The majority were Caucasian (58.0%), 13.6% were Asian, and the remainder self-identified as mixed race, Jewish, Latino, Arabic, and Aboriginal. The majority of participants (80.2%) were enrolled in, or had obtained a Bachelor Degree or a higher degree, with 6.2% were completing or enrolled in technical education, and 13.6% reported having completed high school. Five reported being HIV positive, 65 HIV negative, and eleven did not know their HIV status. All HIV positive
participants reported taking ART and having a non-detectable blood plasma viral load. For the entire sample, the average number of sexual partners over the past three months was 3 \((N = 80, \text{range} \ 0-30, \ SD = 4.72)\). One participant’s data was missing for this question. Ten participants reported that they had not had sex in the past 3 months. The mean proportion of times where participants accessed condoms was 0.46 \((N = 79, \text{range} \ 0-1, \ SD = .46)\), and was 0.37 for condom carrying \((N = 80, \text{range} \ 0-1, \ SD = .44)\). For those that reported having had sex, the mean proportion of times when condoms were used was 0.56 \((N = 70, \text{range} \ 0-1, \ SD = .45)\). The mean number of intoxication events over the past three months was 5.91 \((N = 79, \text{range} \ 0-40, \ SD = 7.66)\). The average scores on the DASS-21 (Lovibond & Lovibond, 1995) were in the mild ranges for both depression \((M = 5.43, SD = 5.07)\) and anxiety \((M = 3.37, SD = 3.89)\), and in the normal range for stress \((M = 6.22, SD = 4.56)\). More than 90% of participants indicated they had accessed condoms (93.8%), more than 80% had carried condoms (87.0%), and 95.1% reported having ever used condoms.

A summary of the hierarchical regression analyses for the TPB variables with intention and behaviour for each of the condom behaviours is presented in table 2.
Table 2
Summary of hierarchical regression analyses for TPB variables with condom intentions and behaviours

<table>
<thead>
<tr>
<th></th>
<th>INTENTION</th>
<th></th>
<th>BEHAVIOUR</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N</td>
<td>β</td>
<td>t</td>
<td>R²</td>
</tr>
<tr>
<td>CONDOM</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Attitude</td>
<td>80</td>
<td>.173</td>
<td>1.472</td>
<td>.145</td>
</tr>
<tr>
<td>SN</td>
<td>80</td>
<td>.313*</td>
<td>2.477</td>
<td>.015</td>
</tr>
<tr>
<td>PBC</td>
<td>80</td>
<td>-1.144</td>
<td>-1.422</td>
<td>.159</td>
</tr>
<tr>
<td>Intention</td>
<td>80</td>
<td>-1.047</td>
<td>-.539</td>
<td>.392</td>
</tr>
</tbody>
</table>
| Note: SN = subjective norm, PBC = perceived behavioural control, β = standardised regression coefficient. * p < .05, ** p < .01, *** p < .001
**Condom accessing intention and behaviour**

**TPB correlations for condom accessing**

There were significant positive correlations between attitude and intention ($r = .29$, $p < .01$), SN and intention ($r = .33$, $p < .01$), and intention and behaviour ($r = .53$, $p < .01$). However, the correlations between PBC and intention, and PBC and behaviour were not significant. A significant negative correlation was found between ratings of anxiety and PBC ($r = -.356$, $p < .01$). A significant positive correlation was also found between the number of AOD intoxication events and SN ($r = .321$, $p < .01$). Correlations are shown in Table 3.
Table 3
Correlations between TPB variables, depression, anxiety, stress, and AOD intoxication for condom accessing

<table>
<thead>
<tr>
<th></th>
<th>M (SD)</th>
<th>Attitude</th>
<th>SN</th>
<th>PBC</th>
<th>Intention</th>
<th>Behaviour</th>
<th>Depression</th>
<th>Anxiety</th>
<th>Stress</th>
<th>AOD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Attitude</td>
<td>6.00 (1.34)</td>
<td>1</td>
<td>.448**</td>
<td>.174</td>
<td>.290**</td>
<td>.292**</td>
<td>.042</td>
<td>-.158</td>
<td>-.063</td>
<td>.022</td>
</tr>
<tr>
<td>Subjective Norm</td>
<td>5.31 (1.50)</td>
<td>1</td>
<td>.400**</td>
<td>.334**</td>
<td>.175</td>
<td>-.054</td>
<td>-.202</td>
<td>-.005</td>
<td>.321**</td>
<td></td>
</tr>
<tr>
<td>PBC</td>
<td>6.29 (1.05)</td>
<td>1</td>
<td>-.008</td>
<td>-.008</td>
<td>-.163</td>
<td>-.356**</td>
<td>-.091</td>
<td>.137</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Intention</td>
<td>5.21 (1.90)</td>
<td>1</td>
<td>.527**</td>
<td>-.011</td>
<td>-.068</td>
<td>.034</td>
<td>.169</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Behaviour</td>
<td>0.46 (0.47)</td>
<td></td>
<td>1</td>
<td>-.001</td>
<td>-.020</td>
<td>.039</td>
<td>.048</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Depression</td>
<td>5.43 (5.07)</td>
<td></td>
<td></td>
<td>1</td>
<td>.700**</td>
<td>.734**</td>
<td>.037</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Anxiety</td>
<td>3.37 (3.89)</td>
<td></td>
<td></td>
<td></td>
<td>1</td>
<td>.671</td>
<td>.007</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Stress</td>
<td>6.22 (4.56)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>AOD</td>
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<td></td>
<td></td>
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<td>1</td>
</tr>
</tbody>
</table>

Note: SN = subjective norm, PBC = perceived behavioural control, AOD = instances of alcohol and other drug intoxication *p < .05, **p < .01
Regression analyses for condom accessing intention and behaviour

Attitude, SN, and PBC predicted 15.2% of the variance in intention to access condoms [$F(3, 76) = 4.55, p = .005$]. However, only SN was a significant independent predictor of intention to access condoms ($\beta = .313, p = .015$). Intention and PBC predicted 27.2% of the variance in condom accessing behaviour [$F(2, 75) = 13.98, p < .001$]. Only intention made a significant independent contribution to condom accessing behaviour ($\beta = .521, p < .001$).

Condom carrying intention and behaviour

TPB correlations for condom carrying intention and behaviour

There were significant positive correlations between attitude and intention ($r = .65, p < .01$), SN and intention ($r = .28, p < .05$), and intention and behaviour ($r = .52, p < .01$). However, the correlations between PBC and intention, and PBC and behaviour were not significant. A significant positive correlation was found between ratings of depression and condom carrying behaviour ($r = .224, p < .05$), and a significant negative correlation was found between ratings of anxiety and PBC ($r = -.425, p < .01$). Correlations are shown in Table 4.
Table 4
Correlations between TPB variables, depression, anxiety, stress, and AOD intoxication for condom carrying

<table>
<thead>
<tr>
<th>M (SD)</th>
<th>Attitude</th>
<th>SN</th>
<th>PBC</th>
<th>Intention</th>
<th>Behaviour</th>
<th>Depression</th>
<th>Anxiety</th>
<th>Stress</th>
<th>AOD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Attitude</td>
<td>5.25 (1.79)</td>
<td>1</td>
<td>.347**</td>
<td>.043</td>
<td>.647**</td>
<td>.529**</td>
<td>.111</td>
<td>-.004</td>
<td>-.005</td>
</tr>
<tr>
<td>Subjective Norm</td>
<td>4.94 (1.66)</td>
<td>1</td>
<td>.167</td>
<td>.280*</td>
<td>.235*</td>
<td>.014</td>
<td>-.056</td>
<td>.058</td>
<td>.161</td>
</tr>
<tr>
<td>PBC</td>
<td>6.44 (1.00)</td>
<td>1</td>
<td>-.071</td>
<td>-.048</td>
<td>-.218</td>
<td>-.425**</td>
<td>-.148</td>
<td>.029</td>
<td></td>
</tr>
<tr>
<td>Intention</td>
<td>4.42 (2.13)</td>
<td>1</td>
<td>.570**</td>
<td>.188</td>
<td>.143</td>
<td>.195</td>
<td>.056</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Behaviour</td>
<td>0.37 (0.44)</td>
<td>1</td>
<td>.224*</td>
<td>.086</td>
<td>.159</td>
<td>.050</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Depression</td>
<td>5.43 (5.07)</td>
<td>1</td>
<td>.700**</td>
<td>.734**</td>
<td>.037</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Anxiety</td>
<td>3.37 (3.89)</td>
<td>1</td>
<td>.671**</td>
<td>.007</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Stress</td>
<td>6.22 (4.56)</td>
<td>1</td>
<td>.100</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>AOD</td>
<td>5.91 (7.66)</td>
<td>1</td>
<td></td>
<td></td>
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<td></td>
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</tbody>
</table>

Note: SN = subjective norm, PBC = perceived behavioural control, AOD = instances of alcohol and other drug intoxication *p < .05, **p < .01
Regression analyses for condom carrying intention and behaviour

Age was added on the first step of the regression analysis and predicted 8.7% of the variance in intention to carry condoms [younger participants indicated lower intentions to carry condoms than older participants; $F(1, 79) = 7.55, p = .007$]. On the second step attitude, SN, and PBC explained an additional 39% of the variance in intention to carry condoms [$F(3, 76) = 18.90, p < .001$]. However, only attitude ($\beta = .599, p < .001$), and age ($\beta = -.217, p = .015$) made significant independent contributions to intention to carry condoms.

Depression was included on the first step of the regression analysis and accounted for 5% of the variance in condom carrying behaviour [$F(1, 78) = 4.13, p = .045$]. However this was no longer significant when the TPB variables were added on the second step. On the second step intention and PBC predicted an additional 28.8% of the variance [$F(2, 76) = 16.52, p < .001$]. Only intention made a significant independent contribution to condom carrying behaviour ($\beta = .548, p < .001$).

Condom use intention and behaviour

TPB correlations for condom use intentions

Attitude was significantly and positively correlated with intention ($r = .61, p < .01$), as was SN ($r = .29, p < .01$). However, PBC did not significantly correlate with intention to use condoms. The number of instance of AOD intoxication correlated significantly and positively with SN ($r = .280, p < .05$). Correlations are shown in Table 5.
<table>
<thead>
<tr>
<th></th>
<th>M (SD)</th>
<th>Attitude</th>
<th>SN</th>
<th>PBC</th>
<th>Intention</th>
<th>Depression</th>
<th>Anxiety</th>
<th>Stress</th>
<th>AOD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Attitude</td>
<td>5.16 (1.97)</td>
<td>1</td>
<td>.275*</td>
<td>.209</td>
<td>.610**</td>
<td>.023</td>
<td>-.018</td>
<td>-.007</td>
<td>-.058</td>
</tr>
<tr>
<td>Subjective Norm</td>
<td>5.63 (1.05)</td>
<td>1</td>
<td>.260*</td>
<td>.292**</td>
<td>-.021</td>
<td>-.218</td>
<td>.056</td>
<td>.280*</td>
<td></td>
</tr>
<tr>
<td>PBC</td>
<td>5.96 (1.32)</td>
<td>1</td>
<td>.087</td>
<td>-.127</td>
<td>-.136</td>
<td>-.096</td>
<td>.011</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Intention</td>
<td>4.63 (2.16)</td>
<td>1</td>
<td>-.013</td>
<td>.055</td>
<td>.035</td>
<td>-.058</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Depression</td>
<td>5.43 (5.07)</td>
<td>1</td>
<td>.700**</td>
<td>.734**</td>
<td>.037</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Anxiety</td>
<td>3.37 (3.89)</td>
<td>1</td>
<td>.671**</td>
<td></td>
<td>.007</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Stress</td>
<td>6.22 (4.56)</td>
<td>1</td>
<td></td>
<td></td>
<td>.100</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>AOD</td>
<td>5.91 (7.66)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note: SN = subjective norm, PBC = perceived behavioural control, AOD = instances of alcohol and other drug intoxication *p < .05, **p < .01
TPB correlations for condom use behaviour

When excluding those participants reporting not having engaged in anal sex, attitude correlated significantly and positively with intention ($r = .60$, $p < .01$), as did SN ($r = .33$, $p < .01$). Again, PBC did not significantly correlate with intention or behaviour. Intention was significantly and positively correlated with condom use behaviour ($r = .76$, $p < .01$). Ratings of anxiety correlated significantly and negatively with SN ($r = -.272$, $p < .05$), and the number of instances of AOD intoxication and SN were significantly and positively correlated ($r = .260$, $p < .05$). See Table 6.
Table 6
Correlations between TPB variables for condom use intentions and behaviour, depression, anxiety, stress, and AOD intoxication (excluding participants reporting nil sexual partners)

<table>
<thead>
<tr>
<th></th>
<th>M (SD)</th>
<th>Attitude</th>
<th>SN</th>
<th>PBC</th>
<th>Intention</th>
<th>Behaviour</th>
<th>Depression</th>
<th>Anxiety</th>
<th>Stress</th>
<th>AOD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Attitude</td>
<td>5.03 (2.05)</td>
<td>1</td>
<td>.385**</td>
<td>.195</td>
<td>.604**</td>
<td>.643**</td>
<td>.040</td>
<td>-.053</td>
<td>.006</td>
<td>-.015</td>
</tr>
<tr>
<td>Subjective Norm</td>
<td>5.69 (1.22)</td>
<td>1</td>
<td>.274*</td>
<td>.334**</td>
<td>.277*</td>
<td>-.047</td>
<td>-.272*</td>
<td>.031</td>
<td>.260*</td>
<td></td>
</tr>
<tr>
<td>PBC</td>
<td>5.91 (1.35)</td>
<td>1</td>
<td>.079</td>
<td>.029</td>
<td>-.111</td>
<td>-.126</td>
<td>-.069</td>
<td>.023</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Intention</td>
<td>4.54 (2.20)</td>
<td>1</td>
<td>.762**</td>
<td>-.002</td>
<td>.051</td>
<td>.042</td>
<td>-.034</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Behaviour</td>
<td>0.56 (0.45)</td>
<td>1</td>
<td>.037</td>
<td>.073</td>
<td>.028</td>
<td>-.017</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Depression</td>
<td>5.63 (5.13)</td>
<td>1</td>
<td>.686**</td>
<td>.703**</td>
<td>.040</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Anxiety</td>
<td>3.26 (3.80)</td>
<td>1</td>
<td>.649**</td>
<td>.028</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Stress</td>
<td>6.23 (4.51)</td>
<td>1</td>
<td></td>
<td>.109</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>AOD intoxication</td>
<td>6.18 (8.02)</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note: SN = subjective norm, PBC = perceived behavioural control, AOD = instances of alcohol and other drug intoxication. *p < .05, **p < .01
Regression analyses for condom use intention and behaviour

Attitude, SN, and PBC predicted 39.4% of the variance in condom use intention \[F(3, 77) = 16.688, p < .001\], with only attitude making a significant independent contribution (\(\beta = .585, p < .000\)).

When excluding participants that reported having no sexual partners, intention and PBC predicted 58.1% of the variance in condom use behaviour \[F(2, 67) = 46.48, p < .000\] with only intention making a significant independent contribution to behaviour (\(\beta = .764, p < .001\)).

Condom use among HIV negative participants

Further regression analyses examining the efficacy of the TPB in explaining condom use were carried out with HIV negative participants. This was completed with the aim of assessing how the TPB applies to condom use when the risk of HIV infection is to the self. The parameters of the regression analyses are shown in Table 7.

Sample characteristics

Of the 65 HIV-negative participants, nine (13.8%) reported not having had any anal sex in the past three months. A total of 27 (41.5%) reported having one sexual partner, and 29 (44.7%) having had two or more anal sex partners in the past three months.

Of the HIV-negative participants, 42 (64.6%) reported having engaged in at least one instance of unprotected anal sex with partners believed to be HIV negative
or of unknown HIV status. One participant reported having engaged in unprotected anal sex with an HIV-positive partner.

Table 7
**Summary of hierarchical regression analyses for TPB variables with condom intentions and behaviours among HIV negative participants**

<table>
<thead>
<tr>
<th>INTENTION</th>
<th>BEHAVIOUR</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>$\beta$</td>
</tr>
<tr>
<td>Attitude</td>
<td>.654**</td>
</tr>
<tr>
<td>Subjective Norm</td>
<td>.027</td>
</tr>
<tr>
<td>PBC</td>
<td>-.077</td>
</tr>
<tr>
<td>Intention</td>
<td>.781***</td>
</tr>
<tr>
<td></td>
<td>.419***</td>
</tr>
</tbody>
</table>

*Note: PBC = perceived behavioural control, $\beta$ = standardised regression coefficient.

* $p < .05$, ** $p < .01$, *** $p < .001$

**TPB correlations for condom use intentions and behaviour of HIV negative participants**

Attitude correlated significantly and positively with intention ($r = .62$, $p < .01$), as did SN ($r = .32$, $p < .01$). PBC did not significantly correlate with intention.

Correlations between the TPB variables for intention are indicated in Table 8 below.
Table 8
Correlations between TPB variables for condom use intentions among all HIV- participants that had sex with partners reported as being of HIV-negative or unknown status

<table>
<thead>
<tr>
<th></th>
<th>Attitude</th>
<th>SN</th>
<th>PBC</th>
<th>Intention</th>
</tr>
</thead>
<tbody>
<tr>
<td>Attitude</td>
<td>1</td>
<td>.456**</td>
<td>.282*</td>
<td>.623**</td>
</tr>
<tr>
<td>SN</td>
<td>1</td>
<td></td>
<td>.354**</td>
<td>.320*</td>
</tr>
<tr>
<td>PBC</td>
<td></td>
<td>1</td>
<td></td>
<td>.125</td>
</tr>
<tr>
<td>Intention</td>
<td></td>
<td></td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>Behaviour</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note: SN = subjective norm, PBC = perceived behavioural control. *p < .05, **p < .01

When those nine participants reporting having had no anal sex partners were excluded, the pattern was similar with attitude (r = .62, p < .01) and SN (r = .32, p < .05) significantly correlated with intention, while PBC did not reach significance. Intention did correlate positively and significantly with condom use behaviour (r = .80, p < .01) and PBC did not. See Table 9.
Table 9
Correlations between TPB variables for condom use intention and behaviour for HIV negative participants (excluding those reporting nil sexual partners)

<table>
<thead>
<tr>
<th></th>
<th>Attitude</th>
<th>SN</th>
<th>PBC</th>
<th>Intention</th>
<th>Behaviour</th>
</tr>
</thead>
<tbody>
<tr>
<td>Attitude</td>
<td>1</td>
<td>.456**</td>
<td>.282*</td>
<td>.623**</td>
<td>.568**</td>
</tr>
<tr>
<td>Subjective Norm</td>
<td>1</td>
<td>.354**</td>
<td>.320*</td>
<td>.289*</td>
<td></td>
</tr>
<tr>
<td>PBC</td>
<td>1</td>
<td>.125</td>
<td></td>
<td>.014</td>
<td></td>
</tr>
<tr>
<td>Intention</td>
<td>1</td>
<td></td>
<td>.802**</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Behaviour</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1</td>
</tr>
</tbody>
</table>

Note: SN = subjective norm, PBC = perceived behavioural control. *p < .05, **p < .01

Regression analyses for condom use intention and behaviour (HIV negative participants)

The TPB variables (attitude, SN, and PBC) predicted 41.9% of the variance in intention to use condoms \[F(3, 61) = 14.68, p < .001\]. Only attitude made a significant independent contribution to intention (\(\beta = .654, p < .001\)).

When excluding those that reported having had no sexual partners, intention and PBC predicted 60.7% of the variance in condom use behaviour \[F(2, 53) = 40.91, p < .001\]. Only intention made a significant independent contribution to condom use behaviour (\(\beta = .781, p < .001\)).
Test for mediation – preparatory behaviours on condom use

Consistent with previous research (Bryan, Fisher, & Fisher, 2002) this study treats the condom preparatory behaviours as individual outcomes that are not related to each other, rather than specifying that each behaviour is determined by its own psychosocial determinants which in turn work towards a common goal of actual condom use. In order to determine whether the preparatory behaviours, accessing and carrying condoms mediated the relationship between condom use intentions and condom behaviour, we created a combined variable for the preparatory behaviours and used it in a mediation analyses. As PBC had failed to reach significance in any of the regression analyses it was omitted from this analysis. As seen in Figure 6 intention to use condoms contributed significantly to condom use behaviour in the absence of preparatory behaviours ($\beta = .758$, $p < .001$). Strong relationships were observed between intention to use condoms and the preparatory behaviours ($\beta = .588$, $p < .001$) and the preparatory behaviours and condom use ($\beta = .433$, $p < .001$). The relationship between intention to use condoms and condom use behaviour remained significant but was reduced when the mediator (preparatory behaviours) was included in the regression analyses ($\beta = .503$, $p < .001$). In order to determine whether there was a true mediation effect, a Sobel test was performed, which confirmed that the preparatory behaviours mediated the relationship between condom use intention and condom use behaviour (Sobel's test = 3.84, $p < .001$).
Figure 6. Mediation analysis of preparatory condom behaviours on the condom use intention and behaviour relationship

Mediator:
Condom accessing and carrying

β = .588**  \rightarrow \  β = .433**

Independent Variable:
Intention

Dependent Variable:
Condom Use

Without Mediator β = .758**

With Mediator β = .503**

** p < .001
Discussion

The aim of this cross-sectional study was to test the construct relationships purported in the TPB when assessing condom accessing, carrying, and use intentions and behaviours (retrospectively) among MSM. While the meta-analysis reported in chapter 2 indicated that the construct relationships within the TPB are robust when examining condom use intention and behaviour among MSM, there were only eight studies appropriate for analysis. The scarcity of studies suggests that further research is needed to better understand the processes involved in condom use among MSM which may assist in the development of population-specific interventions to promote condom use and reduce HIV transmission through unprotected sex. This is the first study to measure the TPB as it applies to these preparatory and use behaviours concurrently among an MSM population. In a rapidly changing climate of HIV intervention and prevention, alternatives to condom use are increasingly becoming known and offered among MSM. This study offers information regarding the associations between the TPB constructs, and its potential to explain condom behaviours among MSM in the era of ART.

Summary of main findings

The variance in intention explained for condom accessing, carrying and use was inconsistent, ranging from 15.2% for condom accessing intentions to nearly 40% for intention to use condoms. Previous studies predicting condom use intention found that the TPB variables explained 17 to 69% of this variance (Sheeran & Taylor, 1999), which is comparable with condom carrying and use intentions in this study. Less variance in intentions to access condoms was explained by the TPB variables, which was slightly lower this. In all regression analyses on intention, one
or more TPB constructs failed to make significant independent contributions. In all regression analyses on intention, attitude or SN failed to contribute significantly to intention, while PBC consistently failed to make a significant contribution to intentions.

The amount of variance explained for each of the condom behaviours ranged from 27% for condom accessing to 58% for condom use behaviour. This was higher for condom use among HIV negative participants at 60.7%. The variance explained within this study for all of the condom behaviours exceeds the average of 19.3% found by McEachan et al. (2011) in their meta-analysis of prospective tests of a variety of health behaviours. It also falls within the range of a review of 56 health behaviour studies that indicated the average amount of explained variance in behaviour was a 34%, ranging from 16% for clinical and screening behaviours up to 42% for HIV-related behaviours (Godin & Kok, 1996). In all regression analyses in this study intention consistently made a significant independent contribution to behaviour, whereas PBC consistently failed to contribute significantly to behaviour.

The results of this study show some inconsistencies between condom accessing, carrying, and use, in the amount of variance in intention and behaviour explained by the TPB variables, and in the relative contributions of the TPB constructs to intention and behaviour. The variables that the TPB proposes determine intention and behaviour were differentially related depending on which behaviour was being examined. The most likely explanation for these inconsistencies is the low power resulting from the small sample size, and any further explanation for the data must be considered with this limitation in mind. A number of possible reasons for the inconsistencies in variance explained by the TPB
and its constructs between the behaviours within this study, and in relation to other research are outlined below.

**Behaviour and TPB construct definitions**

As discussed in the data analysis section, the way in which the behaviours were defined may have influenced the TPB construct associations. Definitions of condom accessing and carrying might have been improved by adding content regarding the necessity of the behaviour in the first instance. For example, if a sexual partner supplies a condom, it may mean that accessing and carrying condoms are deemed unnecessary, potentially making the behaviour redundant, and therefore influencing the TPB associations. For example, definitions might be improved by qualifying the behaviour; “*when your sexual partner(s) does not provide a condom or when you are unsure whether or not they may provide a condom…*” In determining that a condom will not be made available by a sexual partner, the variance accounted for by the TPB, and the various construct associations across the condom behaviours might have increased based on the relative necessity of the behaviour.

Similar considerations may have also applied to the TPB measures. The manner in which PBC is measured in this study may not sufficiently reflect the complexities inherent to the dyadic nature of sexual behaviour. This may explain PBC’s failure to significantly and independently contribute to intention or behaviour, in contrast to previous literature (e.g., McEachan et al., 2011; Webb & Sheeran, 2006). The PBC items in the current study (“*It is up to me whether or not I…*”) asked participants to report on feelings of personal control as they relate to behaviours that might be considered shared responsibilities, and therefore also subject to the influences of the control beliefs of a sexual partner. This may be reflected in higher
levels of variance in PBC as participants interpret this item in a multitude of ways, which then results in poor correlations with intention and behaviour.

**Differences between condom preparatory and use behaviours**

That the levels of explained variance and degrees of association between constructs differed between the condom behaviours might be expected simply due to the fact that they are objectively different behaviours and therefore subject to different factors. In a review of the efficacy of TPB in explaining a number of health-related behaviours, the predictive utility of the TPB was found to be dependent upon the type of behaviour being examined (McEachan et al., 2011). Physical and dietary behaviours were typically well predicted and safer sex, detection, risk and abstinence behaviours were relatively poorly predicted. Similarly the PBC-behaviour relationship was weaker for detection and risk behaviours than for physical activity and dietary behaviours (McEachan et al., 2011).

In the current study, not only do the condom behaviours necessitate different targets, contexts, and times, but they are also subject to fluctuating external influences with each opportunity to engage in the behaviour. Principles of compatibility specify that to predict a specific behaviour directed to a specific target in a given context and time, specific attitudes that correspond to the specific target, time, and context should be assessed (Ajzen, 2005; Fishbein & Ajzen, 1975). That is, the differences between the condom behaviours in terms of the level of variance accounted for by the TPB, and in the relative contribution of its constructs to intention and behaviour are also subject to the influences unique to each behaviour, and to each situation in which the behaviour may occur. Therefore, the observed
differences between behaviours in terms of TPB construct associations and in the level of variance explained might be expected.

It is also worth noting that condom preparatory behaviours are often considered individual outcomes that are not related to each other, rather than behaviours that are determined by unique psychosocial influences which in turn facilitate actual condom use behaviour (Bryan et al., 2002). That is to say, condom preparatory behaviours are related to condom use in that they may be necessary but not sufficient in order to use a condom. The post-hoc analysis of our data indicated that the condom use intention-behaviour relationship is partially mediated through the preparatory behaviours, suggesting that preparatory behaviours may account for some variance in condom use (albeit a little). That the highest amount of variance accounted for by the TPB was for condom use behaviour might be explained by the shared goal of all condom preparatory behaviours; actual condom use.

**Situation and context**

Again, while any interpretation must be considered within the bounds of the limited sample size, it would seem likely that the construct relationships would be differentially influenced by contextual variables that differentiate the behaviours. The context in which sex occurs may be of particular influence to preparatory behaviours. The context may provide condoms and therefore eliminate the need to engage in preparatory behaviours. For example, as condoms are readily available at sex on premises venues (City of Sydney, 2013), for those occasions in which sex is sought here, accessing and carrying condoms may become irrelevant. Therefore, an individual may have positive attitudes, SN, and PBC as they relate to condom
carrying, yet have low intentions to carry condoms when considering this context, and/or infrequently engage in condom carrying.

Unstable contexts, which might be considered more likely to occur among those with multiple partners, may also influence the TPB construct associations. Unstable contexts are thought to prevent the habituation of condom use behaviours (Ouellette & Wood, 1998). Well-practiced condom use in a constant context is thought to recur as the processes that instigate and control the behaviour become automatic. Past condom use frequency may then reflect habit strength that then directly influences future behavioural performance. When condom use is attempted in unstable or more difficult contexts, conscious behavioural decision making is more likely to be necessary to engage in condom use (Ouellette & Wood, 1998). In these circumstances, attitude, SN, PBC may be of more influence in contributing to intention, which then determines behaviour. Therefore, differences in the stability of context influence the importance of the TPB variables in determining behaviour. As multiple contexts make the habitual use of condoms more difficult, this may contribute to lower concordance of TPB construct associations.

Variables external to the TPB

Theoretical constructs external to those included in the TPB, such as habit strength (Allom & Mullan, 2012; Gardner, de Bruijn, & Lally, 2011), motivation (Conner & Armitage, 1998) and self-regulation (Mullan, Allom, Brogan, Kothe, & Todd, 2014), have been found to increase the level of variance explained in intention and behaviour above that explained by the TPB. This is in contrast to the sufficiency assumption (Ajzen, 1985) which assumes that all environmental/demographic influences are mediated entirely through the TPB constructs. It may be that there are
further non-TPB constructs which would improve upon the level of variance explained in intention and behaviour in the current study (Sniehotta et al., 2014). Additionally, if constructs external to the TPB proved to be of more influence on intention or behaviour than one or more of the TPB variables, this might explain some of the non-significant TPB construct associations. For example, if habit strength was more strongly associated with intention to use condoms than the TPB variables, habit strength may not only account for a greater proportion of variance in intention and behaviour that the TPB, but might also explain the weaker/non-significant associations between the TPB variables and intention.

**Weaknesses in the structure of the TPB**

It is possible that the TPB has structural weakness when applied to condom use behaviour among MSM. The Albarracin et al. (2001) meta-analysis of 96 studies examining the TPB as a model of condom use found that the PBC-behaviour relationship was not significant, and possibly indicative of a weakness of the model. This is in keeping with the recent debate initiated by Sniehotta (2014) who criticises the TPB both for its limited predictive validity and its purported sufficiency hypothesis which assumes that all influences on behaviour are mediated through the model’s variables. However, in considering the current study, in the absence of a larger sample size taken from an MSM population it is not possible to assess the structure of the TPB.

**Strengths and limitations**

The main strength of this study is that it provides a study of the TPB specific to condom use behaviours among MSM when relatively few exist. This study adds to
the current knowledge of these behaviours among MSM and provides some suggestion as to how methodology may be improved in the future.

The research presented in this study had several limitations that should be considered when interpreting the results. As previously discussed, the small sample size limited the variability and therefore the power of the analyses. A larger sample would have improved upon this. As this study is cross-sectional and uses a retrospective behaviour measure, the strength of the intention-behaviour relationships may be inflated. Longitudinal studies, such as that attempted in the intervention study in the following chapter, are necessary for the best indication of intention as it predicts behaviour (Ajzen, 1991). Ideally, with a sufficient number of participants we would have been able to conduct path analyses in order to provide estimates of the magnitude and significance of the suggested causal connections between the TPB variables. This would have allowed for commentary on the structure of the TPB as it applies to condom behaviours among MSM.

Conclusion

The low sample size of this study impeded the ability to interpret the data, and support for the purported associations of the TPB was limited in explaining condom use behaviours among MSM. Inconsistency in the level of variance explained by the TPB, and in the relative contributions of the TPB constructs to intention and behaviour differed across the condom behaviours. It is reasonable to assume that the results may have been affected by methodological issues related to the definitions of the behaviours in addition to the low power. Despite this, consistent support for the association between intention and behaviour was found across all condom behaviours, and was strongest for condom use. This is in accordance with a
number of social-cognitive models of health behaviour that propose that intention will have the strongest association with behaviour (Sheeran, 2002). While a better understanding of the determinants of intentions to use condoms in this study is necessary, as has been suggested previously (e.g., Gollwitzer, 1999) the results suggest that interventions that aim to increase intentions to use condoms, or improve the concordance between intention and behaviour may be helpful in increasing condom use among MSM.
Chapter 4: Implementation Intentions Intervention to Increase Condom Use

Introduction

Considering the substantial over-representation of MSM in HIV infection, relatively few intervention studies that aim to increase condom use among MSM have been completed (de Wit & Adam, 2014). As seen in the predictive study in chapter 3, the mean proportion of times where condoms were used approximated 56%, indicating that on average, participants did not use condoms 44% of the time. This result and the relative scarcity of intervention studies that attempt to increase condom use among MSM populations provide a rationale for further assessment of such interventions. In engaging an MSM population in the predictive study in chapter 3, an additional opportunity to assess the ability of an intervention, implementation intentions (Gollwitzer, 1993), in increasing condom use among MSM was made available and is the subject of this chapter.

Positive intentions do not always predict behavioural performance, and strategies that assist individuals in translating their positive intentions into behavioural performance are needed (Sheeran, 2002). That is, despite the assumption that intention is the most proximal determinant of behaviour in most health behaviour theories, the estimate of average correlations between the variables across studies is 0.53, illustrating a significant discrepancy between intention and behaviour (Sheeran, 2002). Where HIV prevention is concerned, knowledge of HIV and methods of avoiding transmission are necessary but not sufficient for the majority of people to increase their engagement in safe sex
behaviour and as such, interventions require more than the provision of such information (Fisher & Fisher, 1992).

In a meta-analytic review of 33 studies of HIV behavioural interventions for reducing sexual risk behaviour (increasing condom use and reducing the number of sexual partners) among MSM, Herbst et al. (2005) found that interventions were more successful when they were based on theoretical models, involved interpersonal skills training, utilised several delivery methods, and were delivered over multiple sessions over a period of at least three weeks. However, Herbst et al. (2005) also concluded that the ability for these HIV prevention methods to effect HIV prevention efforts among MSM is dependent upon the extent to which they can be replicated in MSM community settings and adapted to various different contexts within them. Such intervention methods are therefore dependent on the ability for wide scale community implementation and are impeded by their inherent intensiveness and financial cost (Glasgow, Vogt, & Boles, 1999). Interventions that are easily implemented and cost-effective, are the most likely to be adopted in community settings. One potentially cost-effective and easily implemented intervention that assists people in enacting their intentions is the formation of implementation intentions (Gollwitzer, 1993, 1999). It is of note that none of the studies included in the Herbst et al. (2005) meta-analysis used an implementation intention based intervention.

Implementation intentions are plans of action that detail when, where and how an individual will act in order to achieve a behavioural goal (e.g., using condoms). Gollwitzer (1999) proposed that there were differences between behavioural goals and implementation intentions such that goals indicate an intention to complete a
specified task, such as, “I intend to do x”, whereas implementation intentions further offer a situational and temporal context, such as “I intend to do x, when y situation occurs”. Implementation intentions are not suggested to alter people’s motivation to perform the behaviour (Gollwitzer, 1993; Gollwitzer & Brandstatter, 1997). Rather it is to say that in forming implementation intentions people pass on control from the self to the environment, where the intended behaviour becomes subject to external control through the environmental cues specified in one’s implementation intention. When these cues are encountered in the environment they are expected to prompt the intended behaviour and therefore improve the concordance between intention and behaviour. Evidence of the utility of implementation intentions has been found in a number of health behaviours including physical activity (Ziegelmann, Lippke, & Schwarzer, 2011), smoking cessation (van Osch, Lechner, Reubsaet, & De Vries, 2010), breast self-examination (Orbell, Hodgkins, & Sheeran, 1997), testicular self-examination (Steadman & Quine, 2004), cervical smear testing (Sheeran & Orbell, 2000) and condom use behaviours among young women; buying, carrying, discussing, and using condoms (de Vet et al., 2011).

In a meta-analytic review of 94 independent tests assessing whether the realisation of goal intentions is facilitated by the formation of implementation intentions, Gollwitzer and Sheeran (2006) found a positive effect of medium-to-large size ($d = .65$). Implementation intentions were also shown to be effective in enhancing the initiation of goal striving, protection of goal pursuit from undesired influences, cessation from failing courses of action, and the maintenance of capability for future goal striving (Gollwitzer & Sheeran, 2006). However, none of the studies included in the meta-analysis examined condom use behaviours. In
considering both the Gollwitzer and Sheeran (2006) and the Herbst et al. (2005) reviews, it appears that there is a gap in the literature as to the utility of implementation intentions in increasing condom use among MSM.

**The present study**

The aim of the intervention was to test the efficacy of implementation intentions in increasing condom use behaviour among MSM over an extended period of time. Given the large body of literature supporting implementation intentions it was hypothesised that proportion of times where condoms were used over a three month period would increase for the intervention group when compared to the control group. It was hypothesised that the control group would show no difference in the proportion of time where condoms were used across time points.

**Methods**

**Participants and procedure**

A prospective randomised controlled design was used to assess the effectiveness of implementation intentions in increasing the proportion of times where condoms were used. Participants were recruited in the predictive study in chapter 3 (time 1). For details regarding recruitment and consent to participate please refer to chapter 3. On initiating the questionnaire at time 1, participants were allocated via a PHP file to either the control or intervention (implementation intentions) condition via true randomisation. As the intervention was provided as the final item, participants were not aware of which condition they had been allocated to until after all other measures had been completed.
Control Group

Participants were administered all demographic, TPB, and past behaviour items at time 1. They were contacted via email twelve weeks after completed the predictive study and invited to complete follow up measures at time 2.

Intervention group

Participants were administered all demographic, TPB and past behaviour items at time 1. They were then provided with the following instruction in order to form their own individualised implementation intention for increasing their condom use: “Thinking about the reasons why you might not have used condoms during anal sex where you would have liked to, please write in the box provided how you might alter this in the future, being sure to specify when, where and how you would go about this. Please remember there is no right or wrong answer, and that many people will differ on what they would write here.”

Participants were sent weekly emails over 12 weeks reminding them of their implementation intentions before being invited to complete follow up measures at time 2.

Measures

Demographic and sexual-partner related demographics

All demographic and sexual-partner related items were collected at time 1 and are described in chapter 3. These included measures of age, ethnicity, level of education, depression, anxiety and stress, alcohol and other drug intoxication, HIV clinical indicators, experience in having accessed, carried, and used condoms, and number of sexual partners in the past three months.
At time 2, participants were again asked to provide their HIV status and HIV clinical indicators as this could have changed in the time between time 1 and time 2, and for the number of sexual partners in the past three months. These items were identical to those of time 1.

**TPB and past behaviour measures**

Measures of attitude, SN, PBC, intention, and past behaviour were collected at recruitment (time 1) within the adapted ACNUD scale (see Appendix C) and are described in chapter 3.

**Behaviour**

At time 2 participants were asked to report the number of times they had, and had not, engaged in condom use in the past three months. This item was identical to that of time 1 and is described in chapter 3. As in chapter 3, the proportion of instances of having engaged in a condom behaviour over the past three months was used as the behavioural measure. This was calculated by adding the estimate of the number of times of having engaged in a behaviour in the past three months to the estimate of the number of times of having not engaged in the behaviour in the past three months, and then dividing the sum of the two estimates by the number of times a participant reported having engaged in the behaviour.

**Data analysis**

Differences between participants who completed and did not complete the study were assessed using independent samples t-tests (all demographic, TPB and
past behaviour items). While an intention-to-treat analysis was planned, the high dropout rate at time 2 meant that this would not be meaningful and was therefore not conducted.

A series of paired-samples t-tests were completed to compare the proportion of instances of where condoms were used, between time 1 and time 2 for both the control and intervention groups.

A two-way between-groups ANOVA was conducted to explore the impact of time (pre- and post- intervention) and condition (control and intervention) on condom use behaviour.

Results

Sample characteristics

Of those who completed the questionnaire at time 1, via true randomisation 49 were allocated to the control condition and 35 to the intervention. Two participants in the intervention group requested to withdraw from the second phase of the study.

A total of 28 participants provided behavioural data at time 2 with a mean age of 32 (range 18-63) with 17 (35% of the original sample) in the control group and 11 (31% of the original sample) in the intervention group comprising just over 34% of the original sample, thus attritions was 66%. Independent samples t-tests were used to compare differences between those that completed phase 2 of the study and those that did not on demographic and TPB measures at time 1. There was a significant difference in endorsement of the SN item for using condoms such that those that completed both study phases ($M = 6.04$, SD = 0.922) had higher scores.
than those that did not ($M = 5.40, SD = 1.419$); $t(79) = 2.153, p = .034$. The groups did not differ significantly on any other demographic items or TPB measures.

The majority were Caucasian (71%), almost 11% were Asian, and 18% self-identified as mixed race, Hispanic, and Jewish. Most participants had obtained, or were enrolled in, a Bachelor Degree or higher degree (82%), 7% were enrolled in or had completed technical education, and completion of high school was the highest level of education for 11%.

The number of HIV negative men completing follow up was 26 (40%), 1 (20%) for HIV positive men and none of those that did not know their HIV status at time 1 completed the time 2 measures. The difference in proportion was significant, $\chi^2 (2, N = 81) = 7.2, p = .027$, but may be reflective of the comparatively low numbers of HIV positive and unknown HIV status participants. Three participants previously indicating HIV negative status reported that they did not know their HIV status at time 2. No other demographic variables were significantly related to study completion (see Appendix E for these analyses).

For the entire sample, the average number of sexual partners over the past three months was 3 ($N = 28$, range = 0-14, SD = 3.12). The mean number of intoxication events over the past three months was 3.39 ($N = 28$, range = 0-14, SD = 4.10). The average scores on the DASS-21 (Lovibond & Lovibond, 1995) were in the mild ranges for both depression ($M = 5.43, SD = 4.89$) and anxiety ($M = 3.96, SD = 4.17$), and in the normal range for stress ($M = 7.00, SD = 4.98$).

For participants in the control group that reported having had sex in the past three months, the mean proportion of times that condoms were used was 0.55 ($N = 16$, range = 0-1, SD = 0.44). For participants in the intervention group this was 0.41.
(N = 9, range = 0-1, SD = 0.47). Means and standard deviations for the proportion of times where condoms were used across time and condition are shown in Table 10 below.

Table 10
Mean proportion of instances where condoms were used across time and condition for control and intervention groups

<table>
<thead>
<tr>
<th></th>
<th>Control M (SD)</th>
<th>Intervention M (SD)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Baseline</td>
<td>0.42 (0.47)</td>
<td>0.47 (0.51)</td>
</tr>
<tr>
<td>Follow up</td>
<td>0.55 (0.44)</td>
<td>0.41 (0.47)</td>
</tr>
</tbody>
</table>

**Intervention effects**

A two-way between-groups ANOVA was conducted to explore the impact of time and condition on condom use behaviour. The interaction effect between time and condition was not statistically significant, $F(1, 23) = 2.26, p = .146, \eta^2_p = .09$.

Neither the main effect for time, $F(1, 23) = .34, p = .567, \eta^2_p = .01$, or the main effect for condition $F(1, 23) = .05, p = .825, \eta^2_p = .002$, were statistically significant.

**Discussion**

The aim of this study was to test the utility of an implementation intentions intervention in increasing condom use among MSM over a three month period. The relative lack of theoretically informed, multivariable studies of condom use behaviour among MSM (de Wit & Adam, 2014), the discrepancy between intention and behaviour seen in condom use studies (Albarracin et al., 2001) and in the meta-
analysis and predictive study included in this thesis, the continuing HIV infection rates among MSM (Centers for Disease Control and Prevention, 2013; European Centre for Disease Prevention and Control/WHO Regional Office for Europe, 2013; Kirby Institute, 2013), and the increasing rates of unprotected anal intercourse observed among MSM (Kalichman et al., 2007; Osmond et al., 2007; Ven et al., 1998; Zablotska et al., 2011) provides a strong rationale for further intervention research such as this study.

The retention rate for time 2, approximating only a third of the original sample (which was also subject to limited recruitment) was disappointing and lower than was expected. All completed analyses were non-significant: the interaction of the effect of time and condition on condom use, and the main effects of time or condition on condom use. This was in contrast to the hypothesis that the intervention group would increase condom use over the three months post-intervention. This result contradicts much of the previous literature that indicates support for the role of implementation intentions in improving health behaviours (e.g., Gollwitzer & Brandstatter, 1997; Gollwitzer & Sheeran, 2006). A number of explanations for this result are offered.

**Power**

The small number of participants retained in this study (and recruited at baseline) limited the variability, and therefore the power of the analyses and any further explanation of the data must be considered with this limitation in mind. Future research should aim for larger samples in order to ensure sufficient power in assessing the utility of implementation intentions to increase condom use.
Quality of implementation intentions, complexities of condom use, and complexities of the intervention

Another explanation for the lack of effects is the poor quality evident in some of the implementation intentions (e.g., one word plans, describing past instances of unprotected sex without creating a plan for the future) which meant that they were incomplete and/or insufficient to be considered precise and complete plans. The poor quality of such plans may suggest that condom use is a relatively complex behaviour for which planning is relatively difficult (de Vet et al., 2011), with multiple steps (e.g., accessing, carrying, negotiating, using), and in the case of our sample, multiple partners. With multiple contexts and partners, the implementation intention formed may only prompt behaviour when the sexual situation includes the cues specific to the implementation intention. It is therefore possible that the quality of the implementation intention is also a reflection of the complexity of the intervention (de Vet et al., 2011), where it is difficult to provide a simple implementation intention that will provide a when, where and how that applies to all potential contexts and sexual partners. Forming specific and precise plans may therefore be difficult and a tendency to make broad and/or less effective plans may be evident in the current study.

In a study examining the utility of implementation intentions in increasing both preparatory and actual condom use behaviours among young single women, de Vet et al. (2011) found that implementation intentions for condom use were of poorer quality than for condom preparatory behaviours. When instructed to complete precise and complete implementation intentions, only 17.6% of the sample were able to do so for condom use, whereas between 27.4 and 75.3% of the sample were able
to do so for the preparatory behaviours of buying, carrying and discussing condoms. de Vet et al. (2011) suggested that this result may indicate that condom use is a comparatively difficult behaviour for which planning is difficult. That the higher quality plans were made for preparatory behaviours, which may be carried out individually, while condom use which takes place within the more complex dyad were of poorer quality may not be a coincidence.

**Goal of implementation intention**

The complexities involved in condom use may also mean that the implementation intentions were effective in increasing preparatory behaviours when specified. Participants were able to create their own implementation intentions and therefore were able to plan preparatory behaviours that would make a condom available should a sexual event occur, yet did not guarantee its use. Therefore the goal of the implementation intention may not have been actual condom use.

In contrast, it is also possible that the intervention was ineffective as it did not sufficiently target the self-regulatory problems that militated against participants’ condom use. As the intervention asked participants to create an implementation intention for condom use specifically, it may have not been sufficient to create plans relevant to the preparatory behaviours that would have otherwise provided a condom should the opportunity for sex occur.

**Low intention to use condoms**

The low quality of the implementation intentions in the current study may also be reflective of low motivation to use condoms. Those with low motivation to use
condoms are less likely to form complete and precise implementation intentions, and less likely to use condoms. A plausible explanation for the failure of the intervention in our study to increase condom use is that intentions to use condoms were initially low (Mullan & Wong, 2010). The average rating for the intervention group at recruitment was 3.89 out of a possible total of 7, indicating relative indifference towards condom use.

In contrast to the meta-analytic evidence of Gollwitzer and Sheeran (2006) supporting the utility of implementation intention interventions, there are a number of studies where implementation intentions have not succeeded across a variety of health behaviours and populations (De Vet, Oenema, Sheeran, & Brug, 2009; Mullan & Wong, 2010; Prestwich et al., 2012; Skar, Sniehotta, Molloy, Prestwich, & Araujo-Soares, 2011). A number of explanations have been offered as to why these interventions did not succeed, such as low intentions (Mullan & Wong, 2010), and that implementation intentions are only effective in the presence of other moderating variables such as motivation (Milne, Orbell, & Sheeran, 2002; Prestwich & Kellar, 2014). In this study, the intervention may have been ineffective not only due to the low quality of implementation intentions but also due to the lack of motivation to engage in condom use to start with.

Implementation intentions are described as being effective in that they may turn positive intentions into actions (Gollwitzer, 1993). An intervention aimed at increasing the concordance between condom use intention and condom use behaviour is therefore only likely to be successful when intentions are strong. That the intervention group did not have strong intentions to engage in condom use in the first place may explain why implementation intentions did successfully alter
behaviour. This suggests that a more appropriate intervention would be one that aims to increase ratings of intention to use condoms rather than increasing the concordance between intention and behaviour. As the predictive study in chapter 3 was subject to limited power and found that attitude, SN, and PBC were inconsistent predictors of intention to use condoms, further examination of the determinants of intention is required before selecting or designing an appropriate intervention. An elicitation study of MSM as it relates to the variables that are known to influence condom use behaviour, and therefore intention, may be warranted. For example, individuals, or their sex partners, may be engaging in alternative forms of HIV prevention (e.g., PreP, TasP) that reduce their intentions to use condoms which are not adequately measured in our study. The ambivalence indicated in our intention measure may be a consequence of intention being a variable that changes for MSM depending on these variables that a sexual partner and context introduce to a sex act, and may be subject to fluctuation.

**Appeal of study**

The disappointing participant retention rate raises some questions as to the appeal of the study. While attrition rates in internet based interventions are often high (Eysenbach, 2005), our attrition rate exceeding 60% is higher than the 40-50% typical of internet based studies (Bennett & Glasgow, 2009). This also is in contrast to studies that have found improved intervention success with “push” reminders like the emails used (Bennett & Glasgow, 2009). Given the low intention ratings for intention to use condoms, it is possible that participants did not deem the intervention relevant and became disengaged. Further evidence for this explanation might be seen in the lack of “read receipts” for the implementation intention reminder.
emails. The addition of an assessment of the acceptability of the intervention may have better clarified the reasons for this

**Limitations**

The most obvious limitation of study 2 is the high attrition rate and consequent lack of power. This restricted the ability to perform a meaningful intention to treat analysis, and to reliably interpret the interaction of the effect of time and condition on condom use, or the main effects of time or condition on condom use.

Those choosing to take part in the study were likely to be motivated and organised, and those who completed the intervention were likely to be the most highly motivated of those and therefore not be representative of the wider population. It might be assumed that those that completed the intervention would therefore have been the most likely to have made precise and complete implementation intentions and therefore showed the greatest improvement. It is possible that the intervention did not work as those that completed follow up are engaging in alternative forms of HIV prevention other than condoms. Without a measure of the risk reduction methods that participants have engaged in, this is not possible to assess.

The weekly email reminders of participants’ implementation intentions also had the potential to confound our results as they are essentially a self-monitoring technique. Therefore, this included two interventions concurrently before assessing the implementation intentions intervention alone. The best measure of the efficacy of the intervention would have been to omit the email reminders entirely, or to cease sending them after a period of time which was then followed by a period of time with no reminders.
Conclusion

The limitations imposed on this study by the small number of participants made conclusions regarding the utility of implementation intentions in increasing condom use among a sample of MSM difficult. The poor quality of the implementation intentions suggests that condom use may be a complex behaviour that is difficult to plan for and/or the intervention itself is too complex when attempting to account for the multiple sexual contexts and sexual partners that may apply to this sample of MSM. The low endorsement of intention to use condoms could explain why the intervention did not result in behavioural change, as participants were not motivated to use condoms to begin with. Therefore an intervention such as implementation intentions that aims to improve the concordance between intention and behaviour may be considered less likely to result in behaviour change. In order to better assess the utility of implementation intentions in increasing condom use among MSM, a larger sample size is necessary.
Chapter 5: General Discussion

Aims

The aim of the present research was to assess the utility of the TPB in explaining condom use among MSM via meta-analytic review, and through an online study that tested the purported construct associations within the TPB for condom accessing, carrying, negotiating, use, and disposal behaviours, among adult MSM. An additional intervention study was also conducted to assess whether an implementation intentions intervention could increase condom use.

Summary of the Main Findings

As predicted, the meta-analytic review of the literature revealed robust associations between the TPB variables when applied to condom use among MSM. Significant moderate to strong effect sizes were found for all construct relationships. The type of behavioural measure used (retrospective or prospective) was not found to moderate the relationships between PBC and behaviour, or intention and behaviour. However, this may be a consequence of the small number of data sets available for review, with six of the eight included studies employing retrospective designs. The small number of datasets also restricted the ability to meaningfully assess other potential moderators. That only eight datasets were appropriate for review indicates that studies which examine the TPB as it applies to condom use among MSM are scarce.

In testing the purported associations of the TPB model in the cross-sectional study, weaknesses in the definitions of condom negotiating and disposal behaviours
became apparent and were removed from further analyses. This study was subject to low power and produced inconsistent results across intention and behaviour between the condom behaviours, both in terms of the extent of variance explained by the TPB, and in the relative contributions of the TPB constructs to intention and behaviour. In all regression analyses on intention and behaviour, one or more TPB constructs failed to make significant independent contributions. In all analyses PBC failed to make significant independent contributions to either intention or behaviour. Therefore, the hypothesis that all purported construct relationships in the TPB would be significant when assessing condom accessing, carrying, and use intentions and behaviours among MSM was not fully supported. Nonetheless, intention was consistently associated with behaviour in all analyses and the greatest extent of variance accounted for in intention and behaviour across the condom behaviours was for condom use. A post-hoc analysis revealed that the condom preparatory behaviours, accessing and carrying condoms, partially mediated the relationship between condom use intention and behaviour.

The high attrition rate of the intervention study meant that the study was under-powered, and impeded the ability to conduct all proposed analyses. Consequently, the reported analyses focused on the influence of implementation intentions on condom use behaviour. The interaction between condition and time on condom use behaviour, and main effects of time and condition on condom use behaviour were all non-significant.

**Implications**

The current research presents mixed evidence as to the utility of the TPB in explaining condom behaviours among MSM. Consistent with previous research
(Albarracin et al., 2001), the meta-analysis provided support for the purported TPB construct associations for condom use behaviour, from studies that largely used robust longitudinal designs. However, unlike the Albarracin et al. (2001) meta-analysis which assessed the utility of the TPB in explaining condom use among the general population, the current meta-analysis found that PBC was significantly associated with condom use behaviour, providing additional support for the model in explaining condom use among MSM.

As suggested by Ajzen (2014), the strength of the relationships between the TPB variables is likely to differ depending on the behaviour and population in question. Where other meta-analytic reviews have included studies regarding a wide range of behaviours and/or populations (Albarracin et al., 2001; Hardeman et al., 2002; McEachan et al., 2011), the current meta-analysis, albeit a small number of datasets, found that the TPB is a good model for a specific behaviour, condom use, among a specific population, MSM. Insight into potential moderators of condom use behaviour was limited due to the small number of studies appropriate for meta-analysis. That there are such a small number of TPB-based condom use studies among MSM is surprising given the significant over-representation in HIV infection, and continuing HIV infection rates among MSM populations. Further tests of the TPB specifically among MSM populations are needed to validate the findings of the current meta-analysis and develop population specific interventions.

In contrast to the findings of the meta-analysis, the predictive study found inconsistency in the extent of variance accounted for by the TPB in intention and behaviour, and in the relative contributions of the TPB variables to intention and behaviour, across all measured behaviours. This did not support the hypothesis that
the purported associations between the TPB constructs would all be significant. However, the validity of the results of this study was impacted by the limited sample size and consequent low statistical power of the analyses. A larger sample size is recommended to produce more statistically sound data and to better determine the suitability of the TPB as a model with which to explore condom use among MSM.

Apparent weaknesses in the definitions of the condom behaviours and in the operationalisation of the TPB variables within this study were also apparent and drew attention to the difficulties involved in examining condom preparatory and use behaviours. Condom preparatory behaviours may be enacted by a sexual partner or supplied by the context, therefore deeming them unnecessary to engage in condom use. As such, the definitions of the preparatory behaviours may have been improved by determining first whether or not participants’ deemed them necessary, and/or specifying situations where condoms would not already be supplied. Unlike preparatory behaviours which may be carried out by an individual, condom use is necessarily dyadic. Despite this, the TPB items omitted any consideration of the influences of the sexual partner which likely accounts for some of the variance in intention and behaviour.

That we are applying individual level variables to preparatory behaviours that may be carried out by a sexual partner (or supplied by the context), and to condom use which is by nature dyadic, is problematic for any theory that focuses on individual level variables. Sexual partner variables such as HIV status, relationship status, negotiated risk reduction strategies, and intimacy (Begley et al., 2009; Golub, Starks, Payton, & Parsons, 2012; Mao et al., 2006; Prestage et al., 2005; Wilson et al., 2010) are known to influence condom use decisions among MSM. This indicates
that each sexual partner has the potential to influence the decision making processes that determine sexual risk behaviours in a different manner. Despite this we most frequently on ask participants individual level variable questions implying that they alone will explain each sexual act with multiple partners, and in multiple contexts, in the same manner. The best understanding of sexual risk, which necessitates the participation of another person, will necessarily include variables pertinent to the sexual partner. This explanation may also be relevant where condom use interventions are concerned.

Reviews of health behaviour interventions, such as Gollwitzer and Sheeran’s (2006) meta-analytic review of implementation intentions, include a wide variety of populations, and behaviours of which most can be carried out by an individual. In applying such interventions to sexual behaviours we assume that they are subject to the same or similar factors as health behaviours that may be completed by an individual, and omit the dyadic considerations and sexual partner variables (e.g., HIV status, relationship status) specifically known to influence condom behaviours among MSM. Interventions that aim to increase condom behaviour among MSM would be better informed by research that considers how the variables unique to dyadic behaviours influence the efficacy of such interventions.

Consistent with the findings of many studies using health behaviour theories (McEachan et al., 2011; Sheeran, 2002), the assessment of the TPB associations in explaining condom behaviours found intention to have the strongest and most consistent association with behaviour. While the high attrition rate of our implementation intervention study restricted our ability to make conclusions as to its utility in increasing condom use, one useful finding was that intentions to use
condoms were relatively low across both studies indicating that participants were on average, ambivalent in their intentions to use condoms. Although the ratings of intention to use condoms may have increased with a larger sample size and more variability, that the intervention which aimed to increase the concordance between intention and behaviour, did not increase condom use may not be surprising, considering the relatively low intentions. Before selecting (or designing) an intervention that aims to increase intentions to use condoms it is necessary to better understand the factors that determined the low intention. A larger sample would provide more statistically sound results in determining the strength of the TPB constructs in explaining condom use intentions. However, future studies may also benefit from the addition of known moderators of condom use decisions and/or an elicitation study from MSM populations regarding sexual risk decision making.

**Conclusion**

The climate of HIV prevention is rapidly changing with the increasing availability of ART-based prevention methods in addition to condom use. This is particularly relevant for MSM, a population for which HIV infection rates continue and in which they are vastly over-represented, and in which condom use is decreasing. In attempting to better understand the processes involved in sexual risk decision making among MSM, this thesis has assessed the utility of the TPB in explaining condom preparatory and use behaviours among an MSM population.

The meta-analysis provided the strongest evidence in favour of the TPB, finding that the construct associations are robust and that it is a good model with which to understand the processes involved in condom use among MSM. However, the meta-analysis found high heterogeneity between studies indicating that
moderators external to the TPB were influencing the TPB associations, yet the small number of studies available for review restricted the ability to conduct meaningful moderator analyses.

The cross-sectional study examining the TPB associations was hindered by the low sample size and consequent low statistical power of the analyses. However, it did find consistent support the intention-behaviour relationship across the condom use behaviours. The implementation intentions intervention was also subject to low power, limiting the interpretation of the resulting data. In conclusion, the results of this thesis indicate that further studies of the TPB as it applies to condom use among MSM, which use robust methodology and have sufficient sample size, are necessary to better understand the utility of the TPB in explaining condom use among MSM.
References


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http://www.who.int/mediacentre/factsheets/fs310/en/


Appendices

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Appendix A: Description of the sample of studies and datasets included in the meta-analysis
Table 11. Description of the sample of studies and datasets included in the meta-analysis

<table>
<thead>
<tr>
<th>Study</th>
<th>Location</th>
<th>Type of behaviour</th>
<th>Type of partner</th>
<th>N</th>
<th>Mean age</th>
<th>Other sample characteristics</th>
<th>Retrospective or Prospective</th>
</tr>
</thead>
<tbody>
<tr>
<td>Boldero, Sanitioso, &amp; Brain (1999)</td>
<td>Australia</td>
<td>5 AIDS preventative behaviours combined (includes condom use)</td>
<td>-</td>
<td>90</td>
<td>29.6</td>
<td>Asian Australian</td>
<td>Retrospective</td>
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<td>De Vroome, Stroebe, Sandfort, De Wit, Van Griensven (2000)</td>
<td>Netherlands</td>
<td>Condom use</td>
<td>Casual and Steady Partners</td>
<td>242</td>
<td>42.75</td>
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<td>Prospective</td>
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<td>De Wit, Stroebe, De Vroome, Sandfort, Van Griensven (2000)</td>
<td>Netherlands</td>
<td>Condom use</td>
<td>Casual and Steady Partners</td>
<td>100</td>
<td>44.6</td>
<td></td>
<td>Prospective</td>
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<tr>
<td>Franssens, Hospers, Kok (2009)</td>
<td>Netherlands</td>
<td>Condom use</td>
<td>Casual Partners</td>
<td>181</td>
<td>18.9</td>
<td></td>
<td>Prospective</td>
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<tr>
<td>Godin, Savard, Kok, Fortin, Boyer (1996)</td>
<td>Canada</td>
<td>Condom use</td>
<td></td>
<td>96</td>
<td>35.8</td>
<td>HIV +</td>
<td>Prospective</td>
</tr>
<tr>
<td>Rosario, Mahler, Hunter, Gwadz (1999)</td>
<td>USA</td>
<td>Unprotected anal and oral sex combined</td>
<td></td>
<td>80</td>
<td>18.3</td>
<td></td>
<td>Retrospective</td>
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<tr>
<td>Rye, Fisher, Fisher (2001)</td>
<td>USA</td>
<td>11 safer sex behaviours including condom use</td>
<td></td>
<td>126</td>
<td>-</td>
<td></td>
<td>Prospective</td>
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<td>Schutz, Godin, Kok, Vezina-Im, Naccache, Otis, et al., (2011)</td>
<td>Canada</td>
<td>Condom use</td>
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<td>237</td>
<td>42.5</td>
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Appendix B: Ethics Documents
7 June 2013

Dr Barbara Mullan
School of Psychology
Brennan MacCallum Building
Room 446, The University of Sydney
SYDNEY NSW 2006
Attention: Mr Benjamin Andrew

Dear Dr Mullan

HREC ref no: 13/108 (HREC/13/POWH/268)
Project title: Using implementation intentions to increase safe sex practices among an Australian sample of men who have sex with men

Thank you for submitting the above project which was first considered by the Human Research Ethics Committee (HREC) at its meeting held on 28 May 2013.

In order to make a determination of the ethical acceptability of your project, please respond to the following request(s) for additional information/clarification or modification.

1. Please describe the randomisation process to be used to assign participants to treatment groups.
2. The committee recognised that investigators may identify inadvertent disclosures of concern such as depression, self-harming, reports of sexual assault etc. The investigators are asked to comment on how they plan to deal with this taking into account their duty of care.
3. Please provide details of the education re safe sex that is made available to this participant group.
4. Though the committee acknowledges that it is beyond the specific aims of this study, the investigators are asked to comment on the numerous factors that influence attitudes to safe sex practices such as:
   a. The extent of the use of recreational drugs and alcohol
   b. Attitudes to contracting HIV among different age groups
   c. What men feel would encourage them to use condoms more often
   d. Perceived barriers to condom usage
   e. Factors that guide decision making when considering condom use
5. PIS/page 2 – please complete the first sentence re: the time taken to complete the “Tower of Hanoi”.
6. Please amend the PIs&CF in line with the approved template and adapt it as necessary for your study. It can be found at the following link:
132

rd.doc
7. On page 1 of the PIS&CF the words ‘HIV negative and HIV negative’ should read
‘HIV negative and HIV positive’.
8. Please replace the Sydney University HREC contact details with those of the
SESLHD in the template.
9. Section 9 – please clarify that Ben Andrew is a PhD candidate.
10. Please provide an inked signature on the relevant page of the NEAF of the Head
of Department. This cannot be one of the investigators.

The HREC is supported by a scientific review subcommittee and the following additional
issues have been raised by the Scientific Review Committee. In order to make a determination
of the ethical acceptability of your project, please respond to these further request(s) for
additional information/clarification or modification.

1. The study design lacks a clearly defined primary or secondary outcome. Please
review the protocol to address this omission.
2. Due to the likelihood of loss to follow up, a MANOVA approach to participants with
complete data is an inefficient use of resources. Linear mixed models for
longitudinal data is a much better approach as it uses all available data and has
greater flexibility in terms of modelling both the trajectory and within-subject
variability. Please comment.
3. Additionally, the use of snowball sampling inhibits the use of most procedures for
statistical inference. Randomising enrolled participants will not necessarily
overcome a selection bias. Please comment about its effect on the analysis?
4. Please explain in detail how the data collected in the surveys will be used/analysed
(i.e. depression, anxiety and stress measure; measure of drug and alcohol use;
HIV status etc)
5. The committee noted that investigators intention to store data at their homes raises
concerns for the security of such highly sensitive personal information and suggest
that this is in contravention of The University of Sydney policy. Please comment.
6. Reference in the NEAF to a third person providing consent on behalf of a
participant is not appropriate to this study. Please comment.
7. Please describe how compliance is to be measured and what steps are to be
taken to minimise dropout rates.
8. The committee noted that the investigators should be aware that as an RCT the
study should be registered with a recognised clinical trial registry prior to
commencement, in order to meet most peer reviewed journal’s publication criteria.
(This reinforces the need to be clear about the primary outcome and method of
analysis prior to commencement)

The HREC agreed to refer these matters to the investigator and that the investigator’s
response should be referred to the HREC Executive Committee for review.

Please visit the HREC website for meeting dates, submission deadlines and requirements

INSTRUCTIONS FOR SUBMISSION OF REPLY.
The Committee requests your response to each point in a letter or email and any updated documents in both tracked changes format and a clean copy. Please include the version number, date and page number (e.g. Page 1 of 2) in the footer of all documents. Please email only an electronic copy of your response to ethicsnshn@seslths.health.nsw.gov.au. Only those documents requiring a new signature must be submitted in paper copy (electronic NEAF signature acceptable). We recommend you refer to the NHMRC’s National Statement on Ethical Conduct in Human Research, relevant legislation or other guidelines where appropriate.

Please note that if the requested information is not received within 3 months or 3 meetings (whichever occurs sooner), the application will be dismissed and you will be required to submit a new application.

Should you have any queries about your application please contact the HREC Secretariat, at the Research Support Office on (02) 9382 3587.

Please quote HREC ref no: 13/108 in all correspondence.

Yours sincerely

[Signature]

Deborah Adrian
Executive Officer – Human Research Ethics Committee

This HREC is constituted and operates in accordance with the National Health and Medical Research Council’s (NHMRC) National Statement on Ethical Conduct in Human Research (2007), NHMRC and Universities Australia Australian Code for the Responsible Conduct of Research (2007) and the CPMP/ICH Note for Guidance on Good Clinical Practice.
HUMAN RESEARCH ETHICS COMMITTEE
Room G7/ East Wing
Edmund Baxter Building
Prince of Wales Hospital
RANDWICK NSW 2031
Tel: 02 9382 3987 Fax: 02 9382 3933

8 September 2013

Dr Barbara Mullan
School of Psychology
Brennan MacCallum Building
Room 446, The University of Sydney
SYDNEY NSW 2006
Attention: Mr Benjamin Andrew

Dear Dr Mullan

HREC ref no: 13/106 (HREC/13/POWH/236)
Project title: Using implementation intentions to increase safe sex practices among
an Australian sample of men who have sex with men

Thank you for your correspondence dated 18 August 2013 to the SESLHD Human
Research Ethics Committee (HREC) addressing questions raised by the Committee. The
application was first considered by the HREC on 28 May 2013.

I am pleased to advise that the Executive Committee on 4 September 2013 agreed that
satisfactory responses had been provided. The Committee granted ethical approval for
the project to be conducted at:

- The Albion Centre
- University of Sydney

The following documentation has been approved:
- Response Letter, dated 18 August 2013
- Protocol, version 2, dated 19 August 2013
- Participant Information Sheet and Consent Form, version 2, dated 18 August 2013
- NEAF submission code AU/1/AEE1112, dated 3 April 2013
- ACONUD Scale Questionnaires, version 1, dated 25 April 2013
- DASS 21 Questionnaire, not dated
- Instructions for filling out the Timeline Sex Calendar, version 1, dated 25 April 2013
- Advertisement, version 1, dated 25 April 2013

Conditions of approval
1. This approval is valid for 5 years from the date of this letter.
2. Annual reports must be provided on the anniversary of approval.

3. A final report must be provided at the completion of the project.

4. Proposed changes to the research protocol, conduct of the research, or length of approval will be provided to the Committee.

5. The Principal Investigator will immediately report matters which might warrant review of ethical approval, including unforeseen events which might affect the ethical acceptability of the project and any complaints made by study participants.

**Optional** It is the responsibility of the sponsor or the principal (or co-ordinating) investigator of the project to register this study on a publicly available online registry (e.g. Australian New Zealand Clinical Trials Registry [www.anzctr.org.au]).

For NSW Public Health sites only: You are reminded that this letter constitutes ethical approval only. You must not commence this research project until you have submitted your Site Specific Assessment to the Research Governance Officer of the appropriate institution and have received a letter of authorisation from the General Manager or Chief Executive of that institution.


Please quote **HREC ref no 13/108** in all correspondence.

We wish you every success in your research.

Yours sincerely,

Amanda Idan
Acting Executive Officer, Human Research Ethics Committee

---

This HREC is constituted and operates in accordance with the National Health and Medical Research Council's (NHMRC) *National Statement on Ethical Conduct in Human Research* (2007), NHMRC and Universities Australia *Australian Code for the Responsible Conduct of Research* (2007) and the *CPMP/ICH Note for Guidance on Good Clinical Practice*.  

---

06.05.2013. Exec approval of ethics following responses
9 December 2013

Dr Kim Begley
The Albion Centre
150-154 Albion Street
Surry Hills NSW 2010

Dear Dr Begley

RE: SSA Ref: 13/G/416
HREC / AURED Ref: 13/108 HREC/13/POWH/268
Project Title: Using implementation intentions to increase safe sex practices among an Australian sample of men who have sex with men

I refer to your Site Specific Assessment application for the above titled project. I am pleased to advise that on 6 December 2013, the Medical Executive Director granted authorisation for the above project to commence at the Albion Centre.

The following conditions apply to this research project. These are additional to any conditions imposed by the Human Research Ethics Committee that granted ethical approval:

1. Proposed amendments to the research protocol or conduct of the research which may affect the ethical acceptability of the project, and are submitted to the lead HREC for review, are copied to the Research Governance Officer.

2. Proposed amendments to the research protocol or conduct of the research which may affect the ongoing site acceptability of the project are to be submitted to the Research Governance Officer.

If you have any queries relating to the above please contact the Research Support Office on (02) 9382 3587.

Yours sincerely

[Signature]

Robert Smallcombe
Research Governance Officer
13/108

Using implementation intentions to increase safe sex practices among an Australian sample of men who have sex with men

Dr Barbara Mullan

Benjamin Andrew

The University of Sydney, Psychology Department

9 Victoria Street, Erskineville NSW 2043

0414416906

band3675@uni.sydney.edu.au

1. Indicate how participants are currently involved:
   - Recruitment □ Treatment □ Follow-up □ Other: Not yet recruiting

2. Documents
   Please list the documents (and their version number) you are submitting.
   - ABC Protocol, Version 2, dated 22 September 2010
     1. Participant information and consent form, Version 3, 1 December 2013
     2. Instructions for the Timeline Follow Back Questionnaire, Version 2, 1 December 2013

3. Description of the amendment
   - Protocol amendment, changes to Participant Information Sheet and Consent Form, changes to the conduct of the project
     1. Changes to participant information and consent form
     2. Changes to Timeline Follow Back Questionnaire instructions

4. Reason for the amendment
1. To provide additional information regarding HIV exposure such that participants are made aware that post-exposure prophylaxis (PEP) drug treatment is available where participants may have been exposed to HIV infection.
2. To alter daily recording of anal sex activity over past 3 months to weekly recording of anal sex activity over past 3 months – to reduce participant burden.

5. Ethical implications of the amendment

1. This amendment provides additional information to participants that may reduce the likelihood of HIV infection where an exposure occurs.
2. This will reduce participant time burden in completing the questionnaire – they will only have to provide data for twelve time points rather than ninety.

6. Does this amendment require changes to the Participant Information Sheet and Consent Form(s)?

Yes ☑ No ☐

If yes, please submit the revised documents as listed at Q1 above.

7. Does this amendment require changes to the:

- Clinical Trial Agreement?
  Yes ☐ No ☑ N/A ☑

- Clinical Trial Notification Scheme form?
  Yes ☐ No ☑ N/A ☑

8. Is this project sponsored?

Yes ☐ No ☑


Invoicing details

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**DECLARATION**

I agree that the above information is accurate, and that the project will continue in accordance with the HREC approved protocol and any approved amendments.

Benjamin J. Andrew
Name

Signature

01.12.2013
Date
Dear Ben

Please find below an extract from the minutes of the HREC Executive Committee meeting on 16 December 2013. This feedback relates to the Committee’s consideration of your amendment request dated 1 December 2013.

IMPORTANT

The Executive Officer requests your response to each point in an email to RSOSESLSHD@SESIAHS.HEALTH.NSW.GOV.AU. Please include the relevant point at the head of each response. Please provide any updated documents in both tracked changes format and a clean copy. Please include the version number, date and page number (e.g., Page 1 of 2) in the footer of all documents. Please quote the above HREC ref no in all correspondence.

1. “The study reference number quoted in the PIS&CF is incorrect; at sections 7 and 13 please amend from 13/08 to 13/108.

2. The Committee commends the investigator for taking the initiative to include the 24h PEP hotline in the PIS&CF and requests that the hotline phone number mnemonic is also included i.e, 1800 PEP NOW.

3. The calendar provided is for 6 months – the instructions should explain the reason for this is since only 3 months of sexual activity data are requested, and how the participant should use the calendar.

4. As data is to be recorded in a per week format, ideally the calendar should be clearly divided into weeks for this purpose, with sufficient space for the requested information to be written.”

Please accept this email as formal correspondence; a letter from the HREC can be sent on request.

Kind regards
Paola Spagnoli
Administration Officer
Research Support Office
South Eastern Sydney Local Health District
Prince of Wales Hospital
G71 East Wing, Edmund Blacket Building
To Whom it May Concern,

This email refers to the Committee's considerations regarding an amendment request regarding the above project on 16 December 2013. Our response to each point of the Committee's feedback is outlined below:

1. The study reference number quoted in the PIS&CF is incorrect; at sections 7 and 13 please amend from 13/08 to 13/108.
   Our apologies for this error – this has been amended as requested.

2. The Committee commends the investigator for taking the initiative to include the 24h PEP hotline in the PIS&CF and requests that the hotline phone number mnemonic is also included ie 1800 PEP NOW.
   The mnemonic has been added as requested.

3. The calendar provided is for 6 months – the instructions should explain the reason for this is since only 3 months of sexual activity data are requested, and how the participant should use the calendar. Information stating that a 6-month calendar is provided in order to account for participants initiating the study at different dates.
   It is also clarified that while a 6-month calendar is provided that participants are only asked to provide information regarding the past 3 months’ sexual activity.
   Information clarifying that the calendar is to be used as a guide to assist recall of sexual activity is provided
   An example of how to complete the questions regarding sexual activity is also provided to assist understanding of the instructions.

4. As data is to be recorded in a per week format, ideally the calendar should be clearly divided into weeks for this purpose, with sufficient space for the requested information to be written.
   The questions regarding the past three months sexual activity is provided in the form of a table which is divided into the past twelve weeks. It has separate spaces to ask for the total number of sexual partners, protected receptive anal intercourse, unprotected receptive anal intercourse, protected insertive anal intercourse, and unprotected receptive anal intercourse. A space is also provided for participants to add notes which may assist with recall.

Ben Andrew | Registered Provisional Psychologist
Doctor of Clinical Psychology / Master of Science (candidate)
HUMAN RESEARCH ETHICS COMMITTEE
Room G71 East Wing
Edmund Blackett Building
Prince of Wales Hospital
RANDWICK NSW 2031
Tel: 02 9382 3537 Fax: 02 9382 2813

15 January 2014

Dr Barbara Mullan
School of Psychology
Brennan MacCallum Building
Room 446, The University of Sydney
SYDNEY NSW 2006
Attention: Mr Benjamin Andrew

Dear Dr Mullan

HREC ref no: 13/108 (HREC/13/POWH/268)
Project title: Using implementation intentions to increase safe sex practices among an Australian sample of men who have sex with men

Thank you for your correspondence dated 13 January 2014 to the Human Research Ethics Committee (HREC) responding to questions which arose at the Executive Committee meeting on 16 December 2013.

Authority to grant final approval was delegated to the Executive Officer and I am pleased to advise that ethical approval has been given for the following:

- Amendment Form, dated 1 December 2013
- Participant Information & Consent Form, version 4, dated 1 January 2014
- Instructions to filing in the timeline sex calendar, version 3, dated 1 January 2014

Ethical approval is valid for the following site(s):

- The Albion Centre
- University of Sydney

This amendment has also been reviewed by the Research Governance Officer at SESLHD. Further authorisation of the above approved documents is not required for any site that has the Research Governance conducted by the SESLHD Research Support Office. Implementation of this amendment can now proceed.

For multi-site projects reviewed by the HREC after 1 January 2011 a copy of this letter must be forwarded to all Principal Investigators at every site approved by

Prince of Wales Hospital
Community Health Services
Barker Street
Randwick NSW 2031
the SESLHD HREC for submission to the relevant Research Governance Officer along with a copy of the approved documents.

Should you have any queries, please contact the Research Support Office on (02) 9382 3587. The HREC Terms of Reference, Standard Operating Procedures, membership and standard forms are available from the Research Support Office website: http://www.easlhd.health.nsw.gov.au/POWH/researchsupport/default.asp

Please quote HREC ref no 13/108 in all correspondence. We wish you every success in your research.

Yours sincerely

[Signature]

Deborah Adrian
Executive Officer, Human Research Ethics Committee

This HREC is constituted and operates in accordance with the National Health and Medical Research Council's (NHMRC) National Statement on Ethical Conduct in Human Research (2007), NHMRC and Universities Australia Australian Code for the Responsible Conduct of Research (2007) and the CPMP/ICH Note for Guidance on Good Clinical Practice.
### SOUTH EASTERN SYDNEY LOCAL HEALTH DISTRICT
### HUMAN RESEARCH ETHICS COMMITTEE (HREC)
### AMENDMENT FORM

#### INSTRUCTIONS
Return only 1 x signed electronic copy of this form to:
RSOSES1HD@sesiabs.health.nsw.gov.au

- All sections of this form must be completed; incomplete submissions will be returned.
- Provide all amended documents in both tracked changes format and a clean copy.
- Include the version number, date and page number (e.g. Page 1 of 2) in the footer of all documents.
- Submit 1 x electronic copy only of all documents to
  RSOSES1HD@sesiabs.health.nsw.gov.au
- Requests for approval of updated IBs must be submitted on the IB Amendment Form.

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<td>Project title</td>
<td>Using implementation intentions to increase safe sex practices among an Australian sample of men who have sex with men</td>
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<tr>
<td>Principal investigator</td>
<td>Barbara Mullan</td>
</tr>
<tr>
<td>Contact person</td>
<td>Benjamin Andrew</td>
</tr>
<tr>
<td>Institution/department</td>
<td>The University of Sydney Psychology Department</td>
</tr>
<tr>
<td>Postal address</td>
<td>9 Victoria Street, Erskineville NSW 2043</td>
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<td>Phone</td>
<td>0414416906</td>
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1. **Indicate how participants are currently involved:**
   - [ ] Recruitment  [ ] Treatment  [ ] Follow-up  [x] Other: not yet recruiting

2. **Documents**
   Please list the documents (and their version number) you are submitting.
   1. Instructions for the Timeline Follow Back Questionnaire, Version 4, 1 March 2014

3. **Description of the amendment**
   1. Changes to behavioural questions and instructions.

4. **Reason for the amendment**

Amendment form 01.03.14
1. To simplify the behavioural questions. Feedback from peers consistently states that asking for weekly information of various forms of sexual activity over three months is overly complex and time consuming.

5. Ethical implications of the amendment

1. This amendment will reduce participant time burden in completing the questionnaire – rather than providing information regarding number of sex partners, number of protected and unprotected, insertive and receptive, instances per week over 12 weeks (a total of 80 entries), participants now only require to provide information regarding each behaviour over the entire three month period. The questions will also ask for information regarding HIV statuses of sexual partners (HIV+, HIV-, and status unknown). This will result in a total of 13 data entries regarding sexual behaviour.

6. Does this amendment require changes to the Participant Information Sheet and Consent Form(s)?
   Yes [ ] No [x]  
   If yes, please submit the revised documents as listed at Q1 above.

7. Does this amendment require changes to the:
   - Clinical Trial Agreement?  Yes [ ] No [ ] N/A [x]  
   - Clinical Trial Notification Scheme form? Yes [ ] No [ ] N/A [x]

8. Is this project sponsored?  Yes [ ] No [x]


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DECLARATION

I agree that the above information is accurate, and that the project will continue in accordance with the HREC approved protocol and any approved amendments.

Benjamin J. Andread
Name
Signature
10.08.2014
Date
20 March 2014

Dr Barbara Mullan
School of Psychology
Brennan MacCllum Building
Room 446, The University of Sydney
SYDNEY NSW 2005
Attention: Mr Benjamin Andrew

Dear Dr Mullan

HREC ref no: 13/108 (HREC/13/POW/268)
Project title: Using implementation intentions to increase safe sex practices among an Australian sample of men who have sex with men

Thank you for your amendment request dated 10 March 2014 to the Human Research Ethics Committee (HREC). The Executive Committee reviewed your request on 18 March 2014.

Ethical approval has been given for the following:

- Amendment Form, dated 10 March 2014
- Instructions for Filling Out the Timeline Sex Calendar, version 4, dated 1 March 2014

Ethical approval is valid for the following site(s):

- The Albion Centre
- University of Sydney

This amendment has also been reviewed by the Research Governance Officer at SESLHD. Further authorisation of the above approved documents is not required for any site that has the Research Governance conducted by the SESLHD Research Support Office. Implementation of this amendment can now proceed.

Prinrce of Wales Hospital
Community Health Services
Barker Street
Randwick NSW 2031
For multi-site projects reviewed by the HREC after 1 January 2011 a copy of this letter must be forwarded to all Principal Investigators at every site approved by the SESLHD HREC for submission to the relevant Research Governance Officer along with a copy of the approved documents.

Should you have any queries, please contact the Research Support Office on (02) 9382 3567. The HREC Terms of Reference, Standard Operating Procedures, membership and standard forms are available from the Research Support Office website: http://www.seslhd.health.nsw.gov.au/POWH/researchsupport/default.asp

Please quote HREC ref no 13/108 in all correspondence.

Yours sincerely

[Handwritten signature]

Deborah Adrian
Executive Officer, Human Research Ethics Committee

This HREC is constituted and operates in accordance with the National Health and Medical Research Council’s (NHMRC) National Statement on Ethical Conduct in Human Research (2007), NHMRC and Universities Australia Australian Code for the Responsible Conduct of Research (2007) and the CPMP/ICH Note for Guidance on Good Clinical Practice.
SOUTHEASTERN SYDNEY LOCAL HEALTH DISTRICT  
HUMAN RESEARCH ETHICS COMMITTEE (HREC)  

AMENDMENT FORM

INSTRUCTIONS
Return only 1 x signed electronic copy of this form to:  
RSOSES1.HD@sesiabs.health.nsw.gov.au

- All sections of this form must be completed; incomplete submissions will be returned.
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1. Indicate how participants are currently involved:  
☑ Recruitment  ☐ Treatment  ☐ Follow-up  ☐ Other: ______________

2. Documents  
Please list the documents (and their version number) you are submitting:  
geg ABC Protocol, Version 2, dated 22 September 2010

Protocol, Version 3, 6 May 2014

3. Description of the amendment  
geg Protocol amendment, changes to Participant Information Sheet and Consent Form, changes to the conduct of the project

Additions to method of recruitment – advertising via mailing lists.

4. Reason for the amendment
To improve study recruitment via advertising the study on pre-existing mailing lists.

5. Ethical implications of the amendment

This amendment will likely improve participant recruitment. No risks to potential participants are foreseen.

6. Does this amendment require changes to the Participant Information Sheet and Consent Form(s)?
   Yes ☐ No ☒
   If yes, please submit the revised documents as listed at Q1 above.

7. Does this amendment require changes to the:
   - Clinical Trial Agreement? Yes ☐ No ☐ N/A ☒
   - Clinical Trial Notification Scheme form? Yes ☐ No ☐ N/A ☒

8. Is this project sponsored? Yes ☐ No ☒

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DECLARATION

I agree that the above information is accurate, and that the project will continue in accordance with the HREC approved protocol and any approved amendments.

Benjamin J. Andrews
Name

Signature

06.05.2014
Data
21 May 2014

Dr Barbara Mullan
School of Psychology
Brennan MacCallum Building
Room 446, The University of Sydney
SYDNEY NSW 2006
Attention: Mr Benjamin Andrew

Dear Dr Mullan

HREC ref no: 13/168 (HREC/13/POWH/268)
Project title: Using implementation intentions to increase safe sex practices among an Australian sample of men who have sex with men

Thank you for your amendment request dated 6 May 2014 to the Human Research Ethics Committee (HREC). The Executive Committee reviewed your request on 20 May 2014.

Ethical approval has been given for the following:

- Amendment Form, dated 06 May 2014
- Protocol, version 3, dated 06 May 2014
- Internet Advertisement, version 1, dated 12 May 2014

Ethical approval is valid for the following site(s):

- The Abion Centre
- University of Sydney

This amendment has also been reviewed by the Research Governance Officer at SESLHD. Further authorisation of the above approved documents is not required for any site that has the Research Governance conducted by the SESLHD Research Support Office. Implementation of this amendment can now proceed.
For multi-site projects reviewed by the HREC after 1 January 2011 a copy of this letter must be forwarded to all Principal Investigators at every site approved by the SESLHD HREC for submission to the relevant Research Governance Officer along with a copy of the approved documents.

Should you have any queries, please contact the Research Support Office on (02) 9382 3587. The HREC Terms of Reference, Standard Operating Procedures, membership and standard forms are available from the Research Support Office website: http://www.seslhd.health.nsw.gov.au/POWH/researchsupport/default.asp

Please quote HREC ref no 13/108 in all correspondence.

Yours sincerely

[Signature]

Deborah Adrian
Executive Officer, Human Research Ethics Committee

This HREC is constituted and operates in accordance with the National Health and Medical Research Council’s (NHMRC) National Statement on Ethical Conduct in Human Research (2007), NHMRC and Universities Australia Australian Code for the Responsible Conduct of Research (2007) and the CPMP/ICH Note for Guidance on Good Clinical Practice.
Using implementation intentions to increase safe sex practices among an Australian sample of men who have sex with men

Version Number 3

Date of Protocol: 6 May 2014

Version 3, 01.05.2014
SYNOPSIS

Protocol title: Using implementation intentions to increase safe sex practices among an Australian sample of men who have sex with men

Protocol version: 1

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Summary

Study title: Using implementation intentions to increase safe sex practices among an Australian sample of men who have sex with men

Protocol version: 1

Objectives: This primary objective of this Masters of Science project is to increase condom use behaviours among MSM. It will attempt to do this via two interventions: a planning task known as “implementation intentions” and via ongoing practice of a task known as the “Tower of Hanoi” that aims to increase planning ability at the neural level.

The secondary objective of the project is to evaluate the validity of a theory of health behaviour known as “The Theory of Planned Behaviour” (TPB) in predicting condom use within this population.

In addition to these objectives the project will assess whether there are any differences between HIV positive and HIV negative MSM groups in the effectiveness of the interventions or the validity of the TPB.

Study design: Between subjects

Planned sample size: 180

Selection criteria: Men who have sex with men, Minimum 18 years old, 6 or more casual sex partners within the past 3 months
Study procedure: Participants will be recruited from the Albion Street Centre, banner advertisements on dating websites, sex on premises venues, snowballing, and first-year undergraduates.

Surveys will be completed online and take approximately 25 minutes. Participants will complete:

1) Demographics

2) A measure of depression, anxiety and stress

3) The ACNUD scale

4) A measure of drug and alcohol use

5) A calendar of the past three months’ sexual activity which aims to improve recall

6) Questionnaires estimating the number of instances of unprotected and safe anal sex encounters in the past three months
7) Questionnaires regarding variables that influence safe sex practices such as HIV status, partner(s) HIV status, anti-retroviral therapy use, and current blood plasma viral load.

Participants will be randomly allocated to experimental and control conditions. One experimental condition will be asked to form implementation intentions to use condoms. This will be supplemented with regular emails to reinforce the development of these plans.

Those in the other experimental condition will be asked to repeat a planning task regularly over the next three months. This will assess whether improving executive function may increase motivation to prepare for condom use.

The control group will complete all questionnaires but will not be contacted until 3 months later.

All groups will be contacted three months later to complete the pre-intervention questionnaires.

Statistical considerations: For a medium effect size 160 participants are required.

Analysis plan:

Theory of Planned Behaviour Variables – Stepwise Regression

Relationship between intention and condom use: Bivariate correlations
| Differences between groups (intender/non-intender–actor/abstainer): Linear Mixed Models |
| Differences in UAI instances between experimental and control groups: T-tests |
| Differences in UAI instances between HIV+ and HIV-groups: T-tests |

Duration of the Study: Estimated duration – 12 months.
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BACKGROUND

1.1. Disease Background

HIV is an incurable complex human disease caused by infection with the human immunodeficiency virus which can lead to Acquired Immune Deficiency Syndrome (AIDS) and death (Kull, 2010). HIV has become pandemic since its first officially documented death in 1981 and has profound health, social and psychological consequences for the infected individual. The social and political history of the disease brings to attention the stigma associated with the disease and the communities that predominantly suffer from it, such as men who have sex with men (MSM) and intravenous drug users, which is still present today (Kull, 2010). Epidemiological studies estimate that there have been 35 million deaths from AIDS to date and that there are 33.4 million people currently living with HIV globally (Biswas, in press). 95% of those living with HIV are in low-middle income countries and sub-Saharan Africa remains most heavily affected, making up for 75% of global instances of new infection (Biswas, in press).

As a consequence of the improvements in antiretroviral therapy (ART) since its introduction in the early 1990's, HIV has become a chronic disease with only a slightly reduced life expectancy (Merlin et al., 2012). Sexual beliefs and behaviour have changed as treatments have become more effective (Begley et al., 2008). For example, in assessing transmission risk, beliefs about HIV blood plasma viral load (undetectable viral load may be seen as having low transmission risk) and ART (such that ART treatment leads to the belief that blood plasma viral load will be low and therefore the risk of transmission is also low) have been found to inform types of unsafe sex practices (Begley, Chan, Jeganathan, Batterham, & Smith, 2008). Similarly, some men who have sex with men (MSM) are known to rely on HIV risk reduction strategies that do not involve condom use such as HIV serosorting (seeking partners of the same HIV status), strategic positioning (adopting the insertive or receptive position that minimizes HIV infection risk), relying on undetectable viral load and withdrawal before ejaculation, to reduce the risk of HIV transmission while performing a sexual act that carries a high risk of HIV infection (Begley et al., 2008; Chan et al., 2009; Prestage et al., 2012).

Some studies indicate that while the overall trend after diagnosis suggests a reduction in unsafe sexual practices, up to 30% of those newly diagnosed with HIV continue to engage in unsafe sex practices (Golin et al., 2012; Marks et al., 2005).

While HIV progreses have improved, in addition to the stigma associated with the disease, health complications may arise from both the disease and medication effects, which include, cardiometabolic abnormalities, neurocognitive impairment, frailty, opportunistic infection and increased risk of malignant cancers (Kull, 2010; Merlin et al., 2012).

While there is debate around meaning of the rise in unprotected anal intercourse amongst MSM since the introduction of ART, it is largely assumed that the reduction in disease burden coupled with a complex assessment of risk is responsible for this and many Western countries deal with resurgent and concentrated epidemics of new HIV infections (Beyrer, 2006; Slavon et al., 2004).

Despite many years of community, medical, public health and research efforts, the prevalence of HIV and incident burdens continue to be reported throughout the world.
(Beyer, Baral, van de Greinsven, et al., 2012). Australia saw a national increase in new diagnoses of 8.2% between 2010 and 2011, and notably NSW saw an increase of 33.9% in newly acquired HIV infections in which MSM are vastly over-represented (The Kirby Institute, 2012).

1.2. Rationale for Performing the Study

The increase in new HIV diagnoses in Australia between 2010 and 2011 suggests that Australia is seeing an increase in unsafe sex practices. As MSM are at elevated risk of HIV infection and are over-represented in new HIV infections, this indicates that there is a need for an intervention to increase safe sex practices within this population.

The Theory of Planned Behaviour (TPB) (Ajzen, 1991) suggests that a person's intention to perform a behaviour is the best predictor of behavioural performance (Sheeran & Orbell, 2000). Intentions predict a wide range of healthbehaviours including condom use (Fisher, Fisher & Rye, 1996). The TPB proposes that an individual's intention to perform a behaviour, such as using condoms, is predicted by a person's attitude, perceptions of peers, and an individual's belief about their ability to control their condom use.

The behaviours involved in condom use: Accessing, Using, Negotiating, Using, and Disposing of condoms (ACNUD) have been validated in a sample of the general population using a scale based on those variables that predict intention in the TPB (J. Hancock, personal communication, 19 October, 2012). It follows that in a sample of MSM, that this scale, when adapted for this population, should also be validated, where those attitudes, perceptions of peers, and an individual's beliefs about their ability to use condoms, should predict their intention to use condoms, which should predict their actual condom use behaviour. This project aims to validate the TPB variables for condom use using an adapted version of this scale for MSM.

The project intends to extend on previous research by investigating the utility of The Theory of Planned Behaviour (Ajzen, 1991) in predicting condom use in a MSM population. It also will examine the utility of two interventions: implementation intentions, and increasing self-regulatory capacity, in increasing safe sex practices amongst a population at elevated risk of HIV infection (MSM).

While a meta-analytic review suggests that while 20-30% of variance in behaviour is accounted for by intention, this also means that a significant number of people with positive intentions (e.g. to use condoms) do not perform the behaviour (Sheeran & Orbell, 2000). That is, there is a gap between people’s intentions and behaviour, which has been criticised as a weakness of the model.

It has been suggested that there are a number of “post-intentional” variables that may account for this missing variance which have not been included in the TPB (Hall & Fong, 2007) and may serve as targets for intervention in increasing condom use. Hall and Fong (2007) suggest that intention remains the primary determinant of behavior, but that two post-intentional factors: past performance of that behavior (behavioral proclivity or habit), and self-control (an individual's ability to effortlessly control and self-regulate their own behavior).
lie in the gap between intention and behavior, and exert influence over behavioral performance. Hall and Fong (2007) also suggest that an individual's motivation to perform a behavior may be increased via a feedback loop, whereby the successful completion of a given behavior (which may result from improved self-regulation ability), may improve an individual's self-efficacy (or belief in their ability to control that behavior), therefore increasing their intention to perform that behavior.

Evidence of the utility of implementation intentions, whereby individuals specify when, where and how they will perform an intended behavior, has been found in a number of health behaviors including physical activity (Ziegelmann, Lippeke, & Schwarzer, 2011), smoking cessation (van Osse, Lechner, Rebusaet, & De Vries, 2010), breast self-examination (Orbel, Hodgins, & Shearer, 1997), testicular self-examination (Steadman & Quin, 2004), cervical smear testing (Sheahan & Orbell, 2000), and condom use behaviors (de Vei et al., 2011). This may be considered a self-regulation intervention as it requires an individual to plan and problem solve.

It has also been proposed that tasks that aim to improve self-regulation ability, such as the 'Tower of Hanoi' through practice, may generalize to effect better control of other health behaviors (Allom & Mullan, 2012). That is to say, an improvement in self-regulatory capacity, is expected to generalize to other behaviors, and be exhibited in improvement in self-control beliefs (e.g., improved belief in one's own ability to use condoms) and motivation (Hall & Fong, 2007), which will result in an improvement in intention (to use condoms), which will result in increased behavioral performance (condom use) (Kuhl, 2006).

III. STUDY OBJECTIVES

1.3. Primary Objective

The primary objective is to effect behavioral change such that an increase in condom use behaviors is observed post-intervention. This will be assessed via statistical comparison between rates of condom use pre-use at baseline and three months later. It is expected that both interventions (implementation intentions and self-regulation training) will increase condom use practices over this period of time, and that the increase in condom use in these groups will be statistically different from those in the control group.

1.4. Secondary Objectives

The secondary objective is to evaluate change in the TPB variables that predict behavior post-intervention. It is expected that increased condom use will be associated with increases in positive attitudes toward condom use, and/or increases in favorable subjective norms regarding condom use, increases in perceived behavioral control regarding condom use, and increases in intention to use condoms.
IV. STUDY Design*

1.5. Design*
   - Randomised control trial

1.6. Number of participants*
   180

1.7. Duration
   - July 2013 – July 2014
   - July 2013 – May 2014

V. Participant section

1.8. Inclusion Criteria*
   Males
   Adults (18 years and older)
   Have male sexual partners

   Willingness to give written informed consent (indicating in an online format)

1.9. Exclusion Criteria*
   Women

   Children and/or young people (<18 years)

   People highly dependent on medical care
VI. STUDY Outline

1.10. Study Flow Chart

Potential participants log into website
   ▼
Screening/consent
   ▼
Enrolment
   ▼
Complete questionnaires
   ▼
Random allocation to groups
   ▼
Control
   ▼
Implementation Intentions
   ▼
Follow up: Participants complete the initial questionnaire again
   ▼
Self-Regulation task

Using implementation intentions to increase safe sex practices among MSM
Protocol, Version 3.01.05.2014
### Investigation Plan

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<th>Time 1</th>
<th>Time 2</th>
<th>Time 3 (3 months after time 1)</th>
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<tbody>
<tr>
<td>Participant visits website</td>
<td>✔</td>
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<tr>
<td>Provides informed consent</td>
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<td>Completes inclusion/exclusion questions</td>
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<tr>
<td>Completes questionnaire if suitable for study</td>
<td>✔</td>
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<tr>
<td>Randomly allocated to groups</td>
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<tr>
<td>Intervention groups complete task</td>
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<td>Intervention groups receive emails reminding them of implementation</td>
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<td>intentions to complete self-regulation task (weekly)</td>
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<td>All participants asked to complete initial survey questions</td>
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1.12. Study Procedure Risks
No risks are foreseen.

1.13. Recruitment and Screening
Participants will be recruited via flyers and banner advertisements at/on:

- The Alston Centre in Surry Hills [at this site, Associate Researcher, Ben Andrew, may also hand out flyers and answer questions regarding the study if appropriate]

- MSM dating websites and phone applications (e.g., manhunt.net, gaydar.com, grindr)

- MSM Sex on premises venues (e.g., Bodyline, Headquarters, Signal, Kingsteam)

- Undergraduate pool at Sydney University advertising on SONA for partial course credit

- Snowballing via social networking websites such as Facebook

- *via* mailing lists

As participants will be recruited via the Alston Street Centre, it is possible that they will be undergoing psychological treatment by psychologists involved in the research project (Dr Kim Begley and Benjamin Andrew). Any contact in this instance is restricted to treatment and recruitment will not be carried out in this relationship. As the research project is carried out confidentially online, it is not expected that treating psychologists will be aware of client participation in the project.

Participants will be required to provide their age which will determine whether they are adults and able to take part in the study.

Participants will be asked to read an information and consent form online and then indicate that they are providing consent by clicking on a button on the website.

1.15. Enrollment Procedure
The participant will initiate contact by going to the web address provided on the flyers and banner advertisements. The participant will be enrolled into the study after the informed consent process has been completed and the participant has met all inclusion criteria and none of the exclusion criteria. The participant will receive a study enrollment number which is attached to their provided email
address and will be used to contact them where required as the study progresses. This information will be destroyed when the study is complete.

1.16. Randomisation Procedure

The participant will be randomized once they have met all inclusion criteria and none of the exclusion criteria. An online random number generator (http://www.random.org) will be used to generate 300 integers of the digits 1, 2 and 3, which will then be allocated in the order of generation to each participant as they participate in the study. Those allocated 1 will be allocated to the control group, those allocated 2 to the implementation intention group, and those allocated 3 to the executive function task.

VII. SAFETY

1.17. Adverse Event Reporting

It is not expected that any adverse events will occur and/or be known to the researchers. To take into account their duty of care, the investigators will provide the details of Lifeline, emergency services, Lifeline, Beyond Blue, and the Albion Centre in the RIS&CF statement.

1.18. Data Safety

As the project involves an intervention, the researchers will need to re-contact participants in order to administer questionnaires after a three month gap in order to see if any changes have occurred. No names or dates of birth are required. Participants will be asked to provide an email address to be contacted on. This email address will be attached to a participant code. During this 3 month period data will be stored in two separate de-identified password protected documents and computers at the offices of Barbara Mullan and Ben Andrew behind a firewall at The University of Sydney. Only the researchers will be able to access this data. However once this data has been collected the data will be de-identified and this is how it will be stored.

1.19. Early Termination

It is possible that the study be terminated early if the required number of participants is met before the expected termination date. Should this occur, all advertisements of the study will be collected and the website from which data is collected will no longer be accessible. Instead there will have a message advising that the study is complete. Associate Researcher, Ben Andrew will be responsible for terminating the study, informing all relevant parties (including the HREC) and compiling a final study report.
VIII. STATISTICAL CONSIDERATIONS

Sample Size or Power Calculation

According to Cohen (1992) for a medium effect size at power = .80 and α = .05 for four groups (intend to use condoms – do use condoms; intend to use condoms – do not use condoms; do not intend to use condoms – do use condoms; do not intend to use condoms – do not use condoms), the necessary sample size per group is 48, bringing the total number of participants required to 180.

Statistical Analysis Plan

1) Stepwise regression to test the ACNUD/TPB variables (attitude, subjective norm and perceived behavioral control) in predicting behavior at intake and at 3 month follow up.
2) ANOVA to compare self-regulation, implementation intention and control groups.
3) T-tests to compare instances of UAI between experimental and control groups.
4) T-tests comparing instances of UAI between HIV positive and HIV negative groups within actor/abstainer groups.
5) Linear mixed models for longitudinal data will be used to compare differences between groups of condom use intentioners and non-intentioners, and condom users and non-consistent condom users on the TPB variables and intervention effect.
6) Unfortunately dropout from the study is expected. An intention-to-treat analysis controlling for attrition will be completed to control for the possible effects of this.

IX. STORAGE AND ARCHIVING OF STUDY DOCUMENTS

The information will be stored behind a firewall at Sydney University and on password protected documents – on password protected computers at Sydney University in the offices of Dr Barbara Mullan and Benjamin Andrew.

Participant email addresses will be attached to a participant code in order for them to be recontacted for the second phase. This information will be stored on a password protected document on password protected computers behind a firewall at Sydney University in the offices of Dr Barbara Mullan and Benjamin Andrew. This document will be destroyed when data collection ceases.

Any researcher or investigator that ceases to be engaged at the current organisation will be barred from access to the project’s information/data. Any documents containing confidential information will be transferred to those that remain engaged in the project and passwords that access any of said information will be changed.

The data will be kept behind Sydney University’s firewall for 7 years as is required by law before it is destroyed (deleted from the server).
REFERENCES

References to national and international guidelines on the conduct of research in humans

National Health and Medical Research Council, Australian Vice Chancellors’ Committee, & the Australian Research Council (1997). Joint NHMRC/AVCC statement and guidelines on research practice. National Health and Medical Research Council. 16 Marcus Clarke Street, Canberra ACT 2601.

National Health and Medical Research Council (NHMRC), (1999). National statement on ethical conduct in research involving humans. National Health and Medical Research Council. 16 Marcus Clarke Street, Canberra ACT 2601.

Statement of human experimentation and supplementary notes.


References


The Kirby Institute. (2012). HIV, viral hepatitis and sexually transmissible infections in Australia Annual Surveillance Report 2011. The Kirby Institute, the University of New South Wales, Sydney, NSW.


Participant Information and Consent Form
PARTICIPANT / INFORMATION SHEET AND CONSENT FORM

CLINICAL TRIAL

Using implementation intentions to increase safe sex practices among an Australian sample of men who have sex with men

Invitation
You are invited to participate in a research study into condom use among men who have sex with men (MSM).

The study is being conducted by Ben Andrew and will form the basis of a Master of Science thesis at The University of Sydney under the supervision of Dr Barbara Mullan (Senior Lecturer at the University of Sydney), and Professor John de Wit (Director of the National Centre in HIV Social Research).

Before you decide whether or not you wish to participate in this study, it is important for you to understand why the research is being done and what it will involve. Please take the time to read the following information carefully and discuss it with others if you wish.

Unprotected sex poses a risk of infection with HIV and other sexually transmitted infections (STI). Unprotected anal sex poses the highest risk of HIV and STI infection. Condoms remain the best form of protection against HIV and STI infection.

If you think you have been exposed to HIV, a drug known as PEP (post-exposure prophylaxis) may prevent you becoming infected – if you act quickly. You can access PEP at a sexual health centre or in the accident and emergency sections of most hospitals (open 24 hours). You may also wish to call the 24-hour PEP Hotline on 1800 PEP NOW (1800 737 669) (inside NSW).
1. **What is the purpose of this study?**
   The purpose is to investigate what men who have sex with men think about various condom use behaviours such as accessing and using condoms, about their condom use practices and condom use planning. It also aims to see if there are any differences between HIV negative and HIV positive men in how they respond to these questions, and to see whether planning for condom use, and planning ability in general has any effect on future condom use.

2. **Why have I been invited to participate in this study?**
   You are eligible to participate in this study because you may be accessing healthcare, attending venues, or using phone applications or internet sites that are frequented by adult men who have sex with men. If you are an adult male that has sex with men, then you are eligible to participate in this study.

3. **What if I don’t want to take part in this study, or if I want to withdraw later?**
   Participation in this study is voluntary. It is completely up to you whether or not you participate. If you decide not to participate you will not be penalised in any way.

   New information about the treatment being studied may become available during the course of the study. You will be kept informed of any significant new findings that may affect your willingness to continue in the study.

   If you wish to withdraw from the study once it has started, you can do so at any time without having to give a reason. However, it may not be possible to withdraw your data from the study results if these have already had your identifying details removed.

4. **What does this study involve?**
   This study will ask you to think about condoms, about your condom use practices and that of your peers, your HIV status and viral load, the HIV status of your sexual partners, and HIV antiretroviral drugs. All of these questions will be answered online. You will also be invited to complete the same survey three months later, and will be asked to provide an email in order to do this. These questions should take roughly 20 minutes to complete.

   You may also be asked to describe when, where, and how you might plan to use condoms in the future if you intend to do so. You will be sent an email simply reminding you of this plan once per week.

   Alternatively, you may be invited to regularly practice a computer task over a 3 month period. This task is called “The Tower of Hanoi” and requires you to shift discs between pegs in a planned and organised way. If you are asked to complete the “Tower of Hanoi” planning task, you will be asked to attempt this task four times per week online for 10-15 minutes.

   It is possible that you will not be required to do either of these tasks and will simply be contacted again in 3 months time and asked the same questions as in the initial questionnaire.
The process of allocation is known as a “randomised trial". As researchers sometimes don't know which task will be effect change the most, comparisons need to be made between the different tasks. To do this, study participants are put into groups and given the different tasks, and the results are compared to see whether one treatment is better. To ensure the groups are similar to start with, a computer allocates each study participant into a group randomly, like the flip of a coin. Neither the researcher nor the study participant can decide which treatment the participant receives.

Your email address will be attached to a participant number and kept on a list which will be stored securely and destroyed when the study is complete. You are not required to provide your name or address. All information is kept strictly confidential. The questionnaires should take approximately 20 minutes to complete. You will be asked to complete these twice: once at the beginning of the study, and again 3 months later.

If you agree to participate in this study, you will be asked to provide consent online by checking a box acknowledging this.

This study will be conducted over twelve months.

5. **How is this study being paid for?**
The study is being conducted as part of a Master of Science degree by Ben Andrew at The University of Sydney. Any costs incurred in carrying out the study will be covered by the university. No duality or conflict of interest has been identified by any of the investigators involved in this project. No money is paid directly to individual researchers.

6. **Are there risks to me in taking part in this study?**
It is possible that some of the questions asked might raise issues that you find difficult to deal with. If you experience any distress in participating in this study, please refer to the list of the following support services for assistance.
7. **What happens if I suffer injury or complications as a result of the study?**
No injuries or complications are expected as a result of your participation in this study. In the unlikely event that this were to occur, please contact the South Eastern Sydney Local Health District Human Research Ethics Committee Research Support Office on 02 9382 3587, or email ethicsnhn@sesiahs.health.nsw.gov.au and quote HREC 13/108.

8. **Will I benefit from the study?**
It is possible that if you plan how you might use condoms in the future, or practice the Tower of Hanoi Task regularly that you might increase the frequency of your condom use.

9. **Will taking part in this study cost me anything, and will I be paid?**
Participation in this study will not cost you anything. No reimbursement is provided for your participation in this study, monetary or otherwise.

10. **How will my confidentiality be protected?**
Of the people involved in the study, only Ben Andrew and Dr Barbara Mullan will have access to the answers you provide and to your email address. The email address you provide is not expected to identify you, however you may wish to provide an email that does
not contain your name. Any information that is collected about you in connection with this study will remain confidential and will be disclosed only with your permission, or except as required by law. Only the researchers named above will have access to the information that you provide and results that will be held securely at The University of Sydney.

11. What happens with the results?
If you give us your permission by providing your consent to participate in the study, we plan to discuss/publish the results within the Master of Science thesis, in peer-reviewed journals, and via presentations at academic conferences or other professional forums. The purpose of sharing this information is to add to the literature and knowledge regarding the sexual practices and beliefs of men who have sex with men.

In any publication, information will be provided in such a way that you cannot be identified. Results of the study will be provided to you via your provided email, if you wish.

12. What should I do if I want to discuss this study further before I decide?
When you have read this information, you may contact the researcher Ben Andrew via email to discuss it with you and any queries you may have. If you would like to know more at any stage, please do not hesitate to contact him on band3675@uni.sydney.edu.au

13. Who should I contact if I have concerns about the conduct of this study?
This study has been approved by the South Eastern Sydney Local Health District Human Research Ethics Committee. Any person with concerns or complaints about the conduct of this study should contact the Research Support Office which is nominated to receive complaints from research participants. You should contact them on 02 9382 3587, or email ethicsnhn@sesiahs.health.nsw.gov.au and quote HREC 13/108.

The conduct of this study at The University of Sydney has been authorised by the Human Research Ethics Committee at the university. Any person with concerns or complaints about the conduct of this study may also contact The Manager, Human Ethics Administration, University of Sydney on +61 2 8627 8176 (Telephone); +61 2 8627 8177 (Facsimile) or ro.humanethics@sydney.edu.au (Email).

Thank you for taking the time to consider this study.
If you wish to take part in it, please do so by checking the box that provides consent below.
Internet Advertisement
This study regarding sex and condoms among men who have sex with men is part of a master of science project. The study is run collaboratively between the University of Sydney, The Albion Centre, and the Centre for Social Research in Health. The South Eastern Sydney Health District's Human Ethics Committee has granted approval to run the study (reference 13/108).

The study aims to explore the attitudes, feelings and decision making processes among men who have sex with men around condom use, and to see whether making plans to use condoms, and reminders of this plan, have any effect on future condom use. The study is thought to be important to understanding how decisions to use or not use condoms are made in view of the availability or highly affective antiretroviral therapies to suppress HIV viral load, and aims to include both HIV positive and HIV negative men who have sex with men. The survey is carried out online anonymously, however, an email address is requested in order to send reminders of the condom plan for those who complete this task, and to invite participants to complete the second phase of the study 3 months later.

To access and consent to taking part in this study please click on the link below:

National Ethics Application Form (NEAF)
1. Title

What is the formal title of this research proposal?
Using implementation intentions to increase safe sex practices among an Australian sample of men who have sex with men

What is the short title / acronym of this research proposal (if applicable)?
Intentions to increase safe sex in Australian men who have sex with men (MSM)

2. Description of the project in plain language

Give a concise and simple description (not more than 400 words), in plain language, of the aims of this project, the proposal research design and the methods to be used to achieve those aims.

This Masters of Science project will investigate whether improving planning ability, via practice of a planning task, or through forming plans known as "implementation intentions" (specifying when, where and how an individual might perform an intended behaviour) will increase condom use in MSM.

To assess:

1) Whether attitudes, perceived peer opinions, and an individual's belief about their ability to control their condom use behaviours, would predict intention to perform five condom behaviours as measured by the Accessing, Using, Negotiating, Using, and Disposing of condoms (ACNUD) scale.

2) Whether improving self-control via the continued practice of a planning task is an effective intervention that increases condom use.

3) Whether forming implementation intentions is an effective intervention that increases condom use.

4) Whether the interventions affect MSM differently depending on whether they intend to use condoms or not, and depending on their past condom-use practices.

5) Whether there are any differences in attitude, perceived peer opinions, individual beliefs about ability to control condom use, intentions to use condoms, and in the intervention effectiveness between HIV positive and HIV negative MSM.

Participants will be recruited from the Albion Street Centre, banner advertisements on dating websites, sex on premises venues, snowballing, and first-year undergraduates.

Surveys will be completed online and take approximately 25 minutes. Participants will complete:

1) Demographics
2) A measure of depression, anxiety and stress

3) The ACNUD scale

4) A measure of drug and alcohol use

5) A calendar of the past three months' sexual activity which aims to improve recall

6) Questionnaires estimating the number of instances of unprotected and safe anal sex encounters in the past three months

7) Questionnaires regarding variables that influence safe sex practices such as HIV status, partner(s)' HIV status, anti-retroviral therapy use, and current blood plasma viral load.

Participants will be randomly allocated to experimental and control conditions. One experimental condition will be asked to form implementation intentions to use condoms. This will be supplemented with regular emails to reinforce the development of these plans.

Those in the other experimental condition will be asked to repeat a planning task regularly over the next three months. This will assess whether improving executive function may increase motivation to prepare for condom use.

The control group will complete all questionnaires but will not be contacted until 3 months later.

All groups will be contacted three months later to complete the pre-intervention questionnaires.

2. RESEARCHERS / INVESTIGATOR(S)

Principal researcher(s) / investigator(s)

Title: Forename/Initials: Surname:
Dr. Barbara Mullan

Mailing Address: School of Psychology
Breman MacCallum Building
Room 446

Suburb/Town: The University of Sydney
State: NSW
Postcode: 2006

Country: Australia

Organisation: Sydney University

Department: Psychology

Position: Senior Lecturer

E-mail: barbara.mullan@sydney.edu.au

Phone (BH): +61 2 9351 9811

Phone (A/):

Mobile:

Fax:

Is this person the contact person for this application?

☐ Yes ☐ No

Summary of qualifications and relevant expertise

PhD, Chartered Health Psychologist with the British Psychological Society, Member of the Higher Education Academy (formerly the Institute of Learning and Teaching in Higher Education). Previous research experience includes social cognition models in health psychology, sexuality and sexual health, sex education and self-control skills training.

Please declare any general competing interests
Name the site(s) for which this principal researcher / investigator is responsible.
Sydney University

Describe the role of the principal researcher / investigator in this project.
Supervision of Ben Andrew's Masters of Science project. Supervising the design, recruitment, analysis and writing up of the research project.

Is the principal researcher a student? □ Yes □ No

3. Associate Researcher(s) / Investigator(s)

How many known associate researchers are there? (You will be asked to give contact details for these associate researchers / investigators)

Do you intend to employ other associate researchers / investigators? □ Yes □ No

**Associate Researcher / Investigator 1**

- Title: Forename/Initials: Surname:
  - Dr Kim F. J. Begley
- Mailing Address: 150-154 Albion Street

- Suburb/Town: Surry Hills
- State: NSW
- Postcode: 2010
- Country: Australia
- Organisation: Prince of Wales Hospital
- Department*: The Albion Centre
- Position: Senior Clinical Psychologist
- Email: kim.begley@poh.health.nsw.gov.au
- Phone (BH): 02 9332 9644
- Phone (AH)*:
- Mobile*:
- Pager*:
- Fax: 02 9331 6519

Is this person the contact person for this application? □ Yes □ No

Summary of qualifications and relevant expertise
MClinPsych, PhD, Senior Clinical Psychologist at the Albion Centre, research interests include, medication adherence, safer sexual practices, clinical and health psychology.

Please declare any general competing interests
None

Description of the role of the associate researcher / investigator in this project.
Supervise recruitment and data collection at the Albion Centre.

Name the site at which the associate researcher / investigator has responsibility.
The Albion Centre

Is this associate researcher / investigator a student? □ Yes □ No

**Associate Researcher / Investigator 2**

- Title: Forename/Initials: Surname:
  - Mr Benjamin J. Andrew
- Mailing Address: 9 Victoria Street
Suburb/Town: Erakineville
State: NSW
Postcode: 2043
Country: Australia
Organisation: University of Sydney
Department: Psychology
Position: Doctorate of Clinical Psychology and Masters of Science student
E-mail: band3675@uni.sydney.edu.au
Phone (BH): 0414416506
Phone (AH)*:
Mobile*:
Fax: 02 9331 6519

Is this person the contact person for this application? ☐ Yes ☐ No

Summary of qualifications and relevant expertise
Bachelor of Science (Hons.), currently undertaking combined Doctorate of Clinical Psychology and Masters of Science Degrees at Sydney University. 4 years experience as a research assistant at Sydney University.

Please declare any general competing interests
None

Description of the role of the associate researcher / investigator in this project.
Responsible for the design, recruitment, analysis and writing up of the Masters of Science research project, under the supervision of Sydney University's Dr. Barbara Mulan.

Name the site at which the associate researcher / investigator has responsibility.
Sydney University.

Is this associate researcher / investigator a student? ☐ Yes ☐ No

What is the educational organisation, faculty and degree course of the student?
Organisation: Sydney University
Faculty: Psychology
Degree course: Doctorate of Clinical Psychology/Masters of Science

Is this research project part of the evaluation of the student? ☐ Yes ☐ No

Is the student's involvement in this project elective or compulsory? ☐ Elective ☐ Compulsory

What training has the student received in the relevant research methodology?
Bachelor of Science (Hons.) at Sydney University involved training in research methodology. 4 years experience as research assistant at Sydney University.

What training has the student received in the ethics of research?
Bachelor of Science (Hons.) at Sydney University involved training in ethics of research.

Describe the supervision to be provided to the student.
All supervisors will be involved in the design, recruitment, analysis and writing up of the Masters of Science research project.

How many supervisors does the student have? 3

Supervisor 1
Provide the name, qualifications, and expertise, relevant to this research, of the students' supervisor:
Title: Dr.
First Name: Barbara
Surname: Mulan

Summary of qualifications and relevant expertise
PhD, Chartered Health Psychologist with the British Psychological Society. Member of the Higher Education Academy (formerly the Institute of Learning and Teaching in Higher Education). Research interests include social cognition models in health psychology, the role of gender in health, gender issues in nursing and allied health professionals, sexuality and HIV health, sex education and...
communication skills training.

**Supervisor 2**

*Provide the name, qualifications, and expertise, relevant to this research, of the student's supervisor.*

<table>
<thead>
<tr>
<th>Title</th>
<th>Professor</th>
</tr>
</thead>
<tbody>
<tr>
<td>First Name</td>
<td>John</td>
</tr>
<tr>
<td>Surname</td>
<td>de Wit</td>
</tr>
</tbody>
</table>

**Summary of qualifications and relevant expertise**

PhD, MSc. Centre Director, National Centre in HIV Social Research. Expertise in social psychology, health promotion, behaviour and attitude change, research methods and social understandings of sexual practices.

**Associate Researcher / Investigator 3**

<table>
<thead>
<tr>
<th>Title</th>
<th>Forename/Initials</th>
<th>Surname</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Professor</td>
<td>John</td>
</tr>
<tr>
<td></td>
<td>de Wit</td>
<td></td>
</tr>
</tbody>
</table>

**Mailing Address:**

National Centre in HIV Social Research
Room 316 Goodsell Building
The University of New South Wales

**Suburb/Town:** Sydney

**State:** NSW

**Postcode:** 2052

**Country:** Australia

**Organisation:** National Centre in HIV Social Research

**Department:**

Centre Director

**E-mail:** j.dewit@unsw.edu.au

**Phone (BH):** +61 2 9385 6790

**Mobile:**

**Fax:**

Is this person the contact person for this application?

☐ Yes ☐ No

**Summary of qualifications and relevant expertise**

PhD, MSc. Centre Director, National Centre in HIV Social Research. Expertise in social psychology, health promotion, behaviour and attitude change, research methods and social understandings of sexual practices.

Please declare any general competing interests

None.

**Description of the role of the associate researcher / investigator in this project.**

Associate supervisor to Dr Barbara Mullan. Supervision of Ben Andrew's Masters of Science project. Supervising the design, recruitment, analysis and writing up of the research project.

Name the site at which the associate researcher / investigator has responsibility.

Sydney University.

Is this associate researcher / investigator a student?

☐ Yes ☐ No

5. Other personnel relevant to the research project

5a. How many known other people will play a specified role in the conduct of this research project?

0

5b. Describe the role, and expertise where relevant (e.g. counsellor), of these other personnel.
5c. Is it intended that other people, not yet known, will play a specified role in the conduct of this research project?

☐ Yes  ☐ No

6. Certification of researchers / investigators

6a. Are there any relevant certification, accreditation or credentialing requirements relevant to the conduct of this research?

☐ Yes  ☐ No

7. Training of researchers

7a. Do the researchers / investigators or others involved in any aspect of this research project require any additional training in order to undertake this research?

☐ Yes  ☐ No

3. RESOURCES

Project Funding / Support

1. Indicate how the project will be funded?

Type of funding.

[Please note that all fields in any selected funding detail column (with the exception of the code) will need to be completed.]

<table>
<thead>
<tr>
<th>Funding</th>
<th>Confirmed or Sought?</th>
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</thead>
<tbody>
<tr>
<td>External Competitive Grant</td>
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</tr>
<tr>
<td>Internal Competitive Grant</td>
<td>☐ Confirmed ☐ Sought ☐ Not Sought</td>
</tr>
<tr>
<td>Sponsor</td>
<td>☐ Confirmed ☐ Sought ☐ Not Sought</td>
</tr>
<tr>
<td>By Researchers Department or Organisation</td>
<td>☐ Confirmed ☐ Sought ☐ Not Sought</td>
</tr>
</tbody>
</table>

2. How will you manage a funding shortfall (if any)

No funding shortfalls are expected. This project is part of a Masters of Science degree and any incidental expenses will be covered by the School of Psychology where Mr Benjamin Andrew (the associate researcher) is enrolled.

3. Will the project be supported in other ways eg. in-kind support/equipment by an external party eg. sponsor?

☐ Yes  ☐ No

4. Is this a study where capitalisation payments are to be made, and will participants be made aware of these payments to clinicians or researchers / investigators?

Page 6
Australian National Ethics Application Form (c) 2006 Commonwealth of Australia

Version 2.0 (2008)
No capital payments to be made.

5. Describe any commercialisation or intellectual property implications of the funding/support arrangement.
None.

6. Does the funding/support provider(s) have a financial interest in the outcome of the research?
☐ Yes ☐ No

7. Does any member of the research team have any affiliation with the provider(s) of funding/support, or a financial interest in the outcome of the research?
☐ Yes ☐ No

8. Does any other individual or organisation have an interest in the outcome of this research?
☐ Yes ☐ No

9. Are there any restrictions on the publication of results from this research?
☐ Yes ☐ No

A. PRIOR REVIEWS

Ethical Review
Some HRECs may require researchers to provide information additional to that contained in a NEAF proposal. For this reason, it is prudent to check whether the HRECs to whom you propose to submit this proposal require additional information.

Duration and location

1. In how many Australian sites, or site types, will the research be conducted?
4

2. In how many overseas sites, or site types, will the research be conducted?
0

3. Provide the following information for each site or site type (Australian and overseas, if applicable) at which the research is to be conducted

1
Site / Site Type Name: The Albion Centre
Site / Site Type Location: 153-154 Albion Street, Surry Hills NSW 2010, a unit of Prince of Wales Hospital.

2
Site / Site Type Name: Sydney University
Site / Site Type Location: Sydney University, NSW 2000.
3. Site / Site Type Name: Online dating sites
   Site / Site Type: E.g. manhunt, grindr, gaydar and other dating websites. These sites will advertise the study.
   Location: 

4. Site / Site Type: Sex on premises venues
   Name: E.g. Bodyline, Sinear, Headquarters, King Steam in Surry Hills and Darlinghurst, Sydney.
   Location: These sites will only have posters and flyers providing information about the study.

4. Provide the start and finish dates for the whole of the study including data analysis
   Anticipated start date: 01/05/2013 (dd/mm/yyyy)
   Anticipated finish date: 01/05/2015 (dd/mm/yyyy)

5. Are there any time-critical aspects of the research project of which an HREC should be aware?
   Yes  No

6. To how many Australian HRECs (representing site organisations or the researcher's / investigator's organisation) is it intended that this research proposal be submitted?
   2
   A list of NHMRC registered Human Research Ethics Committees (HRECs), along with their institutional affiliations and contact details is available on the NHMRC website at the following web address: http://www.nhmrc.gov.au/health_ethics/hrecs/overview.html.

7. HRECs
   HREC 1
   Name of HREC: South Eastern Sydney Local Health District HREC (Northern Sector) (EC00134)
   Provide the start and finish dates for the research for which this HREC is providing ethical review:
   Anticipated start date or date range: 01/05/2013 (dd/mm/yyyy)
   Anticipated finish date or date range: 01/05/2015 (dd/mm/yyyy)
   For how many sites at which the research is to be conducted will this HREC provide ethical review?
   2
   Site 1
   Name of Site: The Albion Centre
   Principal Researcher 1
   Principal Researcher Name: Dr Barbara Mullan
8. Have you previously submitted an application, whether in NEAF or otherwise, for ethical review of this research project to any other HRECs?

☐ Yes  ☐ No

9. HRECs

HREC 1

Version 2.0 (2008)
Australian National Ethics Application Form (c) 2006
Commonwealth of Australia
Explain why an application for ethical review was submitted to the HREC(s) identified in answer to question 3, e.g. it may be for another phase of the research project which has very different characteristics. Describe the wider project context, where appropriate.

Research conducted overseas

Peer review

11. Has the research proposal, including design, methodology and evaluation undergone, or will it undergo, a peer review process?

☐ Yes  ☐ No

Provide details of the review and the outcome. A copy of the letter/notification, where available, should be attached to this application.

The preliminary research proposal of this Masters of Science project was reviewed by Louise Sharpe, Professor of Clinical Psychology, and Director of Clinical Research at Sydney University. She awarded the proposal a "pass with merit" grade. Professor Sharpe's email is copied in below.

Louise Sharpe [louise.sharpe@sydney.edu.au] ACTIONS
To: benjamin.andrew@uni.sydney.edu.au Cc: MBarbara Mullan [barbara.mullan@sydney.edu.au]
Inbox Tuesday, 27 November 2012 2:13 PM

Dear Ben,

Your proposal is coming together really well into a very interesting proposal for a large MSc – what I particularly like about it is that because you have the baseline predictive study you have a fallback position in case your “interventions” can not attract sufficient people. I am very happy to award you a PASS WITH MERIT for your study.

Kind regards

Louise

LOUISE SHARPE | Professor of Clinical Psychology
School of Psychology | Faculty of Science
THE UNIVERSITY OF SYDNEY
Rm No. 450 Brennan MacCallum Building A19 | The University of Sydney | NSW | 2006
T +61 2 9351 4558 | F +61 2 9351 7328
E louise.sharpe@sydney.edu.au | W http://sydney.edu.au

2. PROJECT

1. Type of Research

Tick as many of the following 'types of research' as apply to this project. Your answers will assist HREC(s) in
considering your proposal. A tick in some of these boxes will generate additional questions relevant to your proposal (mainly because the National Statement requires additional ethical matters to be considered), which will appear in Section 4 of NEAF.

The project involves:

- [ ] Research using qualitative methods
- [x] Research using quantitative methods, population level data or databanks, e.g. survey research, epidemiological research
- [ ] Clinical research
- [ ] Research involving the collection and/or use of human samples
- [ ] Generic testing/research
- [ ] A cellular therapy
- [ ] Research on workplace practices or possibly impacting on workplace relationships
- [ ] Research conducted overseas involving participants
- [ ] Research involving ionising radiation
- [ ] Research involving gametes or use or creation of embryos
- [ ] None of the above

Does the research involve limited disclosure to participants?

- [ ] Yes  [ ] No

Are the applicants asking the HREC/review body to waive the requirement of consent?

- [ ] Yes  [ ] No

Research plan

2. Describe the theoretical, empirical and/or conceptual basis, and background evidence, for the research proposal, e.g. previous studies, anecdotal evidence, review of literature, prior observation, laboratory or animal studies.

The Theory of Planned Behaviour (TPB) (Ajzen, 1991) suggests that a person's intention to perform a behaviour is the best predictor of behavioural performance (Sheeran & Orbell, 2000). Intentions predict a wide range of health behaviours including condom use (Fisher, Fisher & Rys, 1995). The TPB proposes that an individual's intention to perform a behaviour, such as using condoms, is predicted by a person's attitude, perceptions of peers, and an individual's belief about their ability to control their condom use.

The behaviours involved in condom use: Accessing, Using, Negotiating, Using, and Disposing of condoms (ANCUD) have been validated in a sample of the general population using a scale based on those variables that predict intention in the TPB (J. Hancock, personal communication, 19 October, 2012). It follows, that in a sample of men who have sex with men (MSM), that this scale, when adapted for this population, should also be validated, where those attitudes, perceptions of peers, and an individual's beliefs about their ability to use condoms, should predict their intention to use condoms, which should predict their actual condom use behaviour. This project aims to validate the TPB variables for condom use using an adapted version of this scale for MSM.

While a meta-analytic review suggest that while 20-30% of variance in behaviour is accounted for by intention, this also means that a significant number of people with positive intentions (e.g. to use condoms) do not perform the behaviour (Sheeran & Orbell, 2000). That is, there is a gap between people's intentions and behaviour, which has been criticised as a weakness of the model.

It has been suggested that there are a number of "post-intentional" variables that may account for this missing variance which have not been included in the TPB (Hall & Fong, 2007) and may serve as targets for intervention in increasing condom use. Hall and Fong (2007) suggest that intention remains the primary determinant of behavior, but that post-intentional factors, past performance of that behavior (behavioral prepotency or habit), and self-control (an individual's ability to effectively control and self-regulate their own behavior) lie in the gap between
intention and behavior, and exert influence over behavioral performance. Hall and Fong (2007) also suggest that an individual’s motivation to perform a behavior may be increased via a feedback loop, whereby the successful completion of a given behavior (which may result from improved self-regulation ability), may improve an individual’s self-efficacy (or belief in their ability to control that behavior), therefore increasing their intention to perform that behavior.

Evidence of the utility of implementation intentions, whereby individuals specify when, where and how they will perform an intended behavior has been found in a number of health behaviors including physical activity (Ziegelmann, Lespke, & Schwarzer, 2011), smoking cessation (van Osch, Lechner, Reuvsaele, & De Vries, 2010), breast self-examination (Orbell, Hodgins, & Sheeran, 1997), testicular self-examination (Steadmam & Quine, 2004), cervical smear testing (Sheeran & Orbell, 2000) and condom use behaviors (de Vet et al., 2011). This may be considered a self-regulation intervention as it requires an individual to plan and problem solve. It has also been proposed that tasks that aim to improve self-regulation ability, such as the ‘Tower of Hanoi’ through practice, may generalize to effect better control of other health behaviours (Alom & Mullan, 2012; Baumeister, 2007). That is to say, an improvement in self-regulatory capacity is expected to generalize to other behaviours, and be exhibited in improvement in self-control beliefs (e.g. improved belief in one’s own ability to use condoms) and motivation (Hall & Fong, 2007), which will result in an improvement in intention (to use condoms), which will result in increased behavioral performance (condom use) (Kuhl, 2005).

In this study, participants will be randomly allocated to implementation intention formation, self-regulation practice (Tower of Hanoi), or control conditions.

As the literature demonstrates the utility of this intervention, it is expected that the intervention groups will increase the frequency of condom use.

Further to this, Sheeran and Orbell (2000) propose that when considering interventions and health behaviours, it is not sufficient to assume that every individual is the same but rather that four groups may be identified based on their intention and past behaviour. That is: those that intend to use condoms and do (inclined actors), those that intend to use condoms and do not (inconsistent users (inclined abstainers)), those that do not intend to use condoms and do not (disinclined abstainers), and those that do not intend to use condoms and do (disinclined actors).

This study will assess any differences between these groups (identified via the questionnaires asking about intention to use condoms and past condom use) in the effectiveness of the interventions.

In addition, as previous studies have found differences in intention to use condoms and sexual beliefs between HIV positive and HIV negative MSM (Kol et al. 2007), any difference in the TFP variables, and effectiveness of the interventions between these groups will also be assessed.

References


3. State the aims of the research and the research question and/or hypotheses, where appropriate.

The project intends to extend on previous research by investigating the utility of implementation intentions, and of increasing self-regulatory capacity, in increasing safe sex practices amongst a population at elevated risk of HIV infection, MSM.

1) To assess whether the Theory of Planned Behaviour variables (attitudes, perceptions of peers, and beliefs about condom use control abilities) predict intention to perform the five condom behaviours involved in an adapted version of the ACNUD scale (J. Hancock, personal communication, 2012). It is also expected that these variables will differentiate groups of inclined actors, inclined abstainers, disinclined actors and disinclined abstainers.

2) To assess the utility of a self-regulation task in improving self-regulation ability and increase condom use. It is expected that as a result both intention to use condoms will increase, as will condom use behaviour.

3) To assess the utility of implementation intentions in affecting condom use in MSM. Given the large body of literature supporting implementation intentions, including those on condom use, it is hypothesised that the incidence of unprotected anal intercourse will be reduced as a result of the intervention.

4) To assess whether there are differences in the utility of implementation intentions in affecting condom use when the risk of infection is to others rather than to the self. It is expected that the formation of implementation intentions will reduce the incidence of unprotected anal intercourse to the same extent for those with and without HIV.

4. Has this project been undertaken previously?
   ○ Yes  ○ No

5. Does the research involve a practice or intervention which is an alternative to a standard practice or intervention?
   ○ Yes  ○ No

7. What expected benefits (if any) will this research have for the wider community?
   1) The results may inform methods used in public health campaigns aimed at increasing condom use amongst MSM.
   2) Results may help identify the relative influence of the TPB variables in affecting condom use and therefore direct the point of intervention in public health campaigns (e.g. motivation-intention and/or intention-behaviour).
3) Depending on (2), the findings may be able to inform different forms of health intervention to different sub-populations (e.g. HIV positive condom abusers may require a different form of point of intervention to HIV negative condom abusers).

4) It is possible that the results may be further investigated in clinical settings whereby clients are asked to form implementation intentions or practice self-regulation tasks to affect change.

6. What expected benefits (if any) will this research have for participants?
It anticipated that there will be an increase in condom use amongst participants which may result in a reduction of sexually transmitted disease infection.

9. Are there any risks to participants as a result of participation in this research project?
- Yes
- No

10. Explain how the likely benefit of the research justifies the risks of harm or discomfort to participants.
It is expected that any harm or discomfort will be minimal. Whereas, the benefits will include an increase in condom use practices and a possible reduction in sexually transmitted infections.

11. Are there any other risks involved in this research? e.g. to the research team, the organisation, others
- Yes
- No

12. Is it anticipated that the research will lead to commercial benefit for the investigator(s) and/or the research sponsor (s)?
- Yes
- No

15. Is there a risk that the dissemination of results could cause harm of any kind to individual participants - whether their physical, psychological, spiritual, emotional, social or financial wellbeing, or to their employability or professional relationships - or to their communities?
- Yes
- No

17. What mechanisms do the researchers / investigators intend to implement to monitor the conduct and progress of the research project?
1) Ongoing supervision by experienced researchers.
2) Secure storage of confidential information.
3) Regular meetings with supervisors.

6. PARTICIPANTS

1. Research participants
The National Statement identifies the need to pay additional attention to ethical issues associated with research involving certain specific populations.

This question aims to assist you and the HREC to identify and address ethical issues that are likely to arise in your research, if its design will include one or more of these populations. Further, the National Statement recognizes the cultural diversity of Australia's population and the importance of respect for that diversity in the recruitment and
Involvement of participants. Your answer to this question will guide you to additional questions (if any) relevant to the participants in your study.

Tick as many of the following 'types of research participants' who will be included because of the project design, or their inclusion is possible, given the diversity of Australia's population. If none apply, please indicate this below.

If you select column (a) or (b), column (c) will not apply.

<table>
<thead>
<tr>
<th>The participants who may be involved in this research are:</th>
<th>a) Primary intent of research</th>
<th>b) Probable coincidental recruitment</th>
<th>c) Design specifically excludes</th>
</tr>
</thead>
<tbody>
<tr>
<td>People whose primary language is other than English (LOTE)</td>
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<td></td>
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<tr>
<td>Women who are pregnant and the human foetus</td>
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<tr>
<td>Children and/or young people (e. &lt;18 years)</td>
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<td></td>
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<tr>
<td>People in existing dependent or unequal relationships</td>
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<tr>
<td>People highly dependent on medical care</td>
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<tr>
<td>People with a cognitive impairment, an intellectual disability or a mental illness</td>
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<tr>
<td>Aboriginal and/or Torres Strait Islander peoples</td>
<td></td>
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</tr>
<tr>
<td>People who may be involved in illegal activity</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>None apply</td>
<td></td>
<td></td>
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</tbody>
</table>

You have indicated that it is probable that:
- People whose primary language is other than English (LOTE)
- People in existing dependent or unequal relationships
- People with a cognitive impairment, an intellectual disability or a mental illness
- Aboriginal and/or Torres Strait Islander peoples
- People who may be involved in illegal activity

You identify that the National Statement identifies specific ethical considerations for these group(s).

Please explain how you will address these considerations in your proposed research.

Inclusion criteria will require that participants be fluent in English in order to read and understand the questionnaires, and to read, understand, and give informed consent to participate. Due to financial and practical considerations and restrictions of this Masters of Science project, it is not feasible to translate questionnaires into other languages. Depending on the outcome of this study, this may be considered in future research.

As participants will be recruited via the Albion Street Centre, it is possible that they will be undergoing psychological treatment by psychologists involved in the research project (Dr Kim Begley and Jannine Andrew). Any contact in this instance is restricted to treatment and recruitment will not be carried out in this relationship. As the research project is carried out confidentially online, it is not expected that treating psychologists will be aware of client participation in the project.

As participants will be recruited via the Albion Street Centre, where medical and psychological treatment is provided, and by chance, it is possible that participants may have cognitive impairment, intellectual disability and/or a mental
No questions regarding impairment are asked at any point and participants are not excluded from the study due to these impairments. Participants are free to withdraw at any point without penalty.

It is possible that by chance Aboriginal and/or Torres Strait Islander peoples will be recruited. In reviewing the questionnaires, the researchers are confident that the design of the project does not pose any problems to cultural or language diversity.

In NSW, it is currently illegal to have unprotected sex without informing sex partners, where an individual is HIV positive. Similarly, where a sexual partner is informed of HIV positive status, unprotected intercourse may be considered "reckless" and an act of previous bodily harm. As participants will not be identifiable, the researchers are not under any legal obligation to report such behaviour. Participants will be asked their age, ethnicity and for an email address. No other identifying information will be asked. The email address will be allocated to a participant number - both of which will be kept on password protected documents on password protected computers.

<table>
<thead>
<tr>
<th>Participant description</th>
</tr>
</thead>
</table>

2. How many participant groups are involved in this research project?  
4

3. What is the expected total number of participants in this project at all sites?  
180

4. Groups

Your response to question 1 at Section 6 - "Research Participants" indicates that the following participant groups are excluded from your research. If this is not correct please return to question 1 at Section 6 to amend your answer.

- Women who are pregnant and the human foetus
- Children and/or young people (i.e. <16 years)
- People highly dependent on medical care

5. Have any particular potential participants or groups of participants been excluded from this research? In answering this question you need to consider if it would be unjust to exclude these potential participants.

- Women who are pregnant and the human foetus; as this project is aimed at men who have sex with men (at elevated risk of HIV infection), women are excluded from the study.
- Children and/or young people (i.e. under the age of 18 years); as this study is aimed at adults, children and young people are excluded from the study.
- People highly dependent on medical care: Participants require the capacity to access, understand, and complete the study. Therefore those highly dependant on medical care (e.g. those in a coma) will be excluded from the study.

Participant experience

6. Provide a concise detailed description, in no more than 200 words, in terms which are easily understood by the lay reader of what the participation will involve.

Participants will be asked to complete online questionnaires regarding: demographic information; a measure of depression, anxiety and stress; drug and alcohol intoxication; noting their sexual activity on a calendar so as to better recall and report the number of instances of unprotected, and safe anal sex encounters in the past three months; questions regarding their own intentions and attitudes, and the attitudes of their peers regarding condom use; questions regarding their beliefs about their perceived control to access, carry, negotiate, use and dispose of condoms; questions regarding HIV status; partner(s) HIV status; antiretroviral therapy use, and current blood plasma viral load if HIV positive. Participants will be then separated into groups that may require them to: (1) specify when, where and how they will implement condom use in the future (with regular follow up reminder emails), or (2)
perform a planning task (Tower of Hano) regularly over the next three months, or (3) will not require the participants to do any tasks (control group). All participants will be contacted 3 months later and asked to complete the same questionnaires.

**Relationship of researchers / investigators to participants**

7. Specify the nature of any existing relationship or one likely to rise during the research, between the potential participants and any member of the research team or an organisation involved in the research.

It is possible that participants will be existing or future clients undergoing psychological treatment by researchers KM Begley and Benjamin Andrew.

8. Describe what steps, if any, will be taken to ensure that the relationship does not impair participants’ free and voluntary consent and participation in the project.

Participants are informed that they are able to withdraw from the study any time without penalty. Recruitment will not be carried out in any way as part of treatment and it is unlikely that either researcher will know which of their clients are participating in the study.

9. Describe what steps, if any, will be taken to ensure that decisions about participation in the research do not impair any existing or foreseeable future relationship between participants and researcher / investigator or organisations.

Neither researcher will recruit, or encourage recruitment as part of treatment.

**Recruitment**

10. Will the research impact upon, or change, an existing relationship between participants and researcher / investigator or organisations?

   - Yes
   - No

11. What processes will be used to identify potential participants?

    Participants will be recruited via flyers and posters at the Albion Street Centre, at sex on premises venues, via banner advertisements on online dating websites such as “manhunt.net”, phone applications such as “grindr”, snowballing via social networking websites such as Facebook, and the psychology first-year undergraduate pool - advertising on SDA.

12. Is it proposed to 'screen' or assess the suitability of the potential participants for the study?

    - Yes
    - No

13. Describe how initial contact will be made with potential participants.

    Participants will initiate contact by logging into the websites provided on posters, flyers and banner advertisements. At the Albion Street Centre, Associate Researcher Ben Andrew may hand out flyers, and where appropriate answer questions regarding the study. At Sydney University the study will be advertised as part of first year undergraduate participation, in which the participants will opt to take part in the study if they choose for partial course credit.

14. Do you intend to include both males and females in this study?

    - Yes
    - No

   Please explain why only one sex is involved in the study. In doing this you will need to demonstrate why this approach is valid.

   As men who have sex with men are at elevated risk of HIV infection compared to other groups, the project will use...
17. Is an advertisement, e-mail, website, letter or telephone call proposed as the form of initial contact with potential participants?

☐ Yes  ☐ No

Provide details and a copy of text/script
School of Psychology
Faculty of Science
Volunteers Needed for Research
Volunteers needed for a study on condom use among men who have sex with men

This research has been approved by the Human Research Ethics Committee (approval #)

Please go to www.Xxxx.com (website to be created) or contact Ben at healthsydney@gmail.com for more details.

18. If it became known that a person was recruited to, participated in, or was excluded from the research, would that knowledge expose the person to any disadvantage or risk?

☐ Yes  ☐ No

Consent process

19. Will consent for participation in this research be sought from all participants?

☐ Yes  ☐ No

Will there be participants who have capacity to give consent for themselves?

☐ Yes  ☐ No

What mechanisms/assessments/tools are to be used, if any, to determine each of these participant's capacity to decide whether or not to participate?

None.

Are any of the participants children or young people?

☐ Yes  ☐ No

Will there be participants who do not have capacity to give consent for themselves?

☐ Yes  ☐ No

The following questions relate to participants who are able to provide consent and also to participants for whom consent may be provided by a person with legal authority to do so. When answering these questions you need to describe any differences in the processes followed, or the documentation used, for different groups of participants in your proposal, e.g. processes and documentation for users of facilities/services will differ from those for providers of those facilities/services. Where your proposal involves participants with an intellectual or mental impairment, or people in dependent relationships, additional questions about their consent appear at section 7 questions 16-20 and questions 15-18 respectively.

Describe the consent process, i.e. how participants or those deciding for them will be informed about, and choose whether or not to participate in, the project. When participants initially log into the website provided, they will be provided with information about the project and what they will be required to do before checking a box stating that they agree to participate.

If a participant or person on behalf of a participant chooses not to participate, are there specific consequences of which they should be made aware, prior to making this decision?

None.

Might individual participants be identifiable by other members of their group, and if so could this identification could...
expose them to risks? All participant information will be kept strictly confidential. Unless participants choose to discuss their having taken part in the project, they will remain anonymous. If they choose to inform others of their participation, they may disclose information about their sexuality and sex acts, however this is unlikely to put them at risk in any way.

If a participant or person on behalf of a participant chooses to withdraw from the research, are there specific consequences of which they should be made aware prior to giving consent? None.

 Specify the nature and value of any proposed incentive/payment (eg. movie tickets, food vouchers) or reimbursement (eg travel expenses) to participants. No incentive/payment or reimbursement will be provided except for first year undergraduate student who will receive partial course credit up to 5% for their participation, however they are still free to withdraw at any time without penalty and this will be made clear to them.

 Explain why this offer will not impair the voluntary nature of the consent, whether by participants or persons deciding for their behalf. N/A.

Do you propose to obtain consent from individual participants for your use of their stored data/samples for this research project?
☐ Yes ☐ No

Give justification No information, other than that asked in the questionnaires is required.

7. Participants Specific

8. CONFIDENTIALITY/PRIVACY

Answers to the questions in section 8.1 will establish whether an HREC will need to apply guidelines under federal or State/territory privacy legislation in reviewing your application. Answers to questions in the remaining parts of section 8 will show how confidentiality of participants is to be protected in your research.

1. Do privacy guidelines need to be applied in the ethical review of this proposal?

Indicate whether the source of the information about participants which will be used in this research project will involve:

☐ collection directly from the participant
☐ collection from another person about the participant
☐ use or disclosure of information by an agency, authority or organisation other than your organisation
☐ use of information which you or your organisation collected previously for a purpose other than this research project

Information which will be collected for this research project directly from the participant

Describe the information that will be collected directly from participants. Be specific where appropriate. The number of instances of unprotected and safe anal sex encounters in the past three months.

Information regarding the participants’ attitudes, and the attitudes of their peers regarding condom use.

Information regarding how much control participants believe they have over their own use of condoms.

Participants will be asked to provide information that has shown to influence unprotected sex practices such as HIV status, partner(s) HIV status, antiretroviral therapy use, and current blood plasma viral load if HIV positive.

The will be asked to estimate drug and alcohol consumption as this has been shown to influence health behaviours

A measure of depression, anxiety and stress, as this has been shown to mediate some health behaviours.

A measure of depression, anxiety and stress, as this has been shown to influence health behaviours.

Participants will be asked to provide an email address in order to contact them for the follow up study.

The information collected by the research team about participants will be in the following form(s). Tick more than one box if applicable.

☐ individually identifiable
☐ re-identifiable
☐ non-identifiable
Gives reasons why it is necessary to collect information in individually identifiable or re-identifiable form.

As the project involves an intervention, the researchers will need to re-contact participants in order to administer questionnaires after a three month gap in order to see if any changes have occurred. Participants will be asked to provide an email address to be contacted on. During the 3 month period data will be stored in two separate de-identified password protected documents and computers, and only the researchers will be able to access this data. However once this data has been collected, the data will be de-identified and this is how it will be stored.

Using information from participants

2. Describe how information collected about participants will be used in this project.

Statistical analysis to assess any differences between groups (those that intend to use condoms and do so, those that intend to use condoms and do not, those that do not intend to use condoms and do not, those that do not intend to use condoms and do not) in relation to their unprotected/protected anal sex acts, attitudes and experiences of peers to condom use, belief about control over condom use, HIV status and and partner(s), antiretroviral therapy use and current blood plasma viral level if HIV positive. The same questionnaires given after the intervention will provide information to assess whether the intervention was effective. Possible moderating effects of drug and alcohol use, and depression and anxiety and stress, will also be statistically assessed. The information will be used as part of a Masters of Science project and may be presented at academic conferences and/or in the form of academic publications.

3. Will any of the information be used by the research team be in identified or re-identifiable (coded) form?

☐ Yes  ☐ No

Indicate whichever of the following applies to this project:
☐ Information collected for, used in, or generated by, this project will not be used for any other purpose.
☐ Information collected for, used in, or generated by, this project will be used for another purpose by the researcher for which ethical approval will be sought.
☐ Information collected for, used in, or generated by, this project is intended to be used for establishing a database/data collection/registry for future use by the researcher for which ethical approval will be sought.
☐ Information collected for, used in, or generated by, this project will be made available to a third party for a subsequent use for which ethical approval will be sought.

4. List ALL research personnel and others who, for the purposes of this research, will have authority to use or have access to the information and describe the nature of the use or access. Examples of others are: student supervisors, research monitors, pharmaceutical company monitors.

Dr Barbara Mulan (Principal researcher, student supervisor and research monitor)
Professor John de Wit (Associate researcher, student supervisor and research monitor)
Dr Kim Begley (Associate researcher, student supervisor)
Benjamin Andrew (Student and researcher)

Storage of information about participants during and after completion of the project

5. In what formats will the information be stored during and after the research project? (Examples: paper copy, computer file on floppy disk or CD, audio tape, videotape, film)

The information will be stored behind a firewall at Sydney University and on password protected documents on password protected computers at Sydney University in the office of Dr Barbara Mulan and at the home office at the Sydney University of Benjamin Andrew.

6. Specify the measures to be taken to ensure the security of information from misuse, loss, or unauthorised access; while stored during and after the research project? (Examples: will identifiers be removed and at what stage? Will the information be physically stored in a locked cabinet?)

Participant email addresses will be attached to a participant code in order for them to be re-contacted for the second
9. The information which will be stored at the completion of this project is of the following type(s). Tick more than one box if applicable.

- [ ] individually identifiable
- [ ] re-identifiable
- [ ] non-identifiable

10. For how long will the information be stored after the completion of the project and why has this period been chosen?

7 years as is required by law.

11. What arrangements are in place with regard to the storage of the information collected for, used in, or generated by this project in the event that the principal researcher / investigator ceases to be engaged at the current organisation?

Any researcher or investigator that ceases to be engaged at the current organisation will be barred from access to the project's information/data. Any documents containing confidential information will be transferred to those that remain engaged in the project and passwords that access any of the said information will be changed.

Ownership of the information collected during the research project and resulting from the research project

13. Who is understood to own the information resulting from the research, e.g. the final report or published form of the results?

The researchers

14. Does the owner of the information or any other party have any right to impose limitations or conditions on the publication of the results of this project?

- [ ] Yes
- [ ] No

Disposal of the information

15. Will the information collected for, used in, or generated by this project be disposed of at some stage?

- [ ] Yes
- [ ] No

At what stage will the information be disposed?
After 7 years (time required to keep information by law)
How will information, in all forms, be disposed?
Deleted from server.

Reporting individual results to participants and others

16. Is it intended that results of the research that relate to a specific participant be reported to that participant?

- [ ] Yes
- [ ] No

Explain why results will not be reported to participants:
17. Is the research likely to produce information of personal significance to individual participants?
- Yes
- No

18. Will individual participant’s results be recorded with their personal records?
- Yes
- No

19. Is it intended that results that relate to a specific participant be reported to anyone other than that participant?
- Yes
- No

20. Is the research likely to reveal a significant risk to the health or well-being of persons other than the participant, e.g. family members, colleagues?
- Yes
- No

21. Is there a risk that the dissemination of results could cause harm of any kind to individual participants - whether their physical, psychological, spiritual, emotional, social or financial well-being, or to their employability or professional relationships - or to their communities?
- Yes
- No

22. How is it intended to disseminate the results of the research? e.g. report, publication, thesis
- As part of a Master of Science thesis, academic conference and publications.

23. Will the confidentiality of participants and their data be protected in the dissemination of research results?
- Yes
- No

Explain how confidentiality of participants and their data will be protected in the dissemination of research results; Only aggregate data will be reported.

19. Declarations And Signatures

Applicant / Principal Researchers (including students where permitted)

Project Title (in full):

Using implementation intentions to increase safe sex practices among an Australian sample of men who have sex with men

HREC to which this application is made:

HREC Reference number:

I/we certify that:
All information is truthful and as complete as possible.

I/we have had access to and read the National Statement on Ethical Conduct in Research Involving Humans.

The research will be conducted in accordance with the National Statement.

The research will be conducted in accordance with the ethical and research arrangements of the organisations involved.

The research will be conducted in accordance with the ethical and research arrangements of the organisations involved.

I/we have consulted any relevant legislation and regulators, and the research will be conducted in accordance with these.

I/we will immediately report to the HREC anything which might warrant review of the ethical approval of the proposal (NS 2.37), including:

- serious or unexpected adverse effects on participants;
- proposed changes in the protocol;
- unforeseen events that might affect continued ethical acceptability of the project.

I/we will inform the HREC, giving reasons, if the research project is discontinued before the expected date of completion (NS 2.38);

I/we will not continue the research if ethical approval is withdrawn and will comply with any special conditions required by the HREC (NS 2.45);

I/we will adhere to the conditions of approval stipulated by the HREC and will cooperate with HREC monitoring requirements. At a minimum annual progress reports and a final report will be provided to the HREC.

Applicant / Chief Researcher(s) / Principal Researcher(s)

Dr Barbara Mullan
Sydney University

Signature

Date

Associate Researchers

Dr Kim F. J. Begley
Prince of Wales Hospital

Signature

Date

Mr Benjamin J. Andrew
University of Sydney

Signature

Date

Professor John de Vitt
National Centre in HIV Social Research

Signature

Date

Supervisor(s) of student(s)

Project Title (in full):

Using implementation intentions to increase safe sex practices among an Australian sample of men who have sex with men

HREC to which this application is made:

HREC Reference number:

I/we certify that:

- I/we will provide appropriate supervision to the student to ensure that the project is undertaken in accordance with the undertakings above;
- I/we will ensure that training is provided necessary to enable the project to be undertaken skillfully and ethically.
Dr. Barbara Mullin

Professor John de Wil

Heads of departments/schools/research organisation

Project Title (in full): Using implementation intentions to increase safe sex practices among an Australian sample of men who have sex with men

HREC to which this application is made:

HREC Reference number:

I/we certify that:

- I/we are familiar with this project and endorse its undertaking;
- the resources required to undertake this project are available;
- the researchers have the skill and expertise to undertake this project appropriately or will undergo appropriate training as specified in this application.

Title

First Name

Surname

Position

Organisation Name

Signature

Date

11. Attachments

List of Attachments

Core Attachments

Recruitment/Invitation

Participant Information

Attachments which may be required/appropriate

Copy of advertisement, letter of invitation etc

Copy or script for participant
Copies or scripts for parent, legal guardian or person responsible as appropriate

Consent Form
Copy for participant
For parent, legal guardian or person responsible as appropriate
For, optional components of the project eg. genetic study

Peer review
Copy of peer review report or grant submission outcome

HREC approval
Copy of outcome of other HREC reviews

<table>
<thead>
<tr>
<th>Attachments specific to project or participant group</th>
<th>Attachments which may be required/appropriate</th>
</tr>
</thead>
<tbody>
<tr>
<td>People whose primary language is other than English (LOTE)</td>
<td>English translation of participant information/consent forms</td>
</tr>
<tr>
<td>People with an intellectual or mental impairment</td>
<td>Information/consent form for legal guardian or person responsible</td>
</tr>
<tr>
<td>Aboriginal and/or Torres Strait Islander peoples</td>
<td>Evidence of support / permission of elders and/or other appropriate bodies</td>
</tr>
</tbody>
</table>

Participant information elements

Core Elements
Provision of information to participants about the following topics should be considered for all research projects.

<table>
<thead>
<tr>
<th>Core Elements</th>
<th>Issues to consider in participant information</th>
</tr>
</thead>
<tbody>
<tr>
<td>About the project</td>
<td>Full title and / or short title of the project</td>
</tr>
<tr>
<td></td>
<td>Plain language description of the project</td>
</tr>
<tr>
<td></td>
<td>Purpose / aim of the project and research methods as appropriate</td>
</tr>
<tr>
<td></td>
<td>Demands, risks, inconveniences, discomforts of participation in the project</td>
</tr>
<tr>
<td></td>
<td>Outcomes and benefits of the project</td>
</tr>
<tr>
<td></td>
<td>Project start, finish, duration</td>
</tr>
<tr>
<td>About the investigators / organisation</td>
<td>Researchers conducting the project (including whether student researchers are involved)</td>
</tr>
<tr>
<td></td>
<td>Organisations which are involved / responsible</td>
</tr>
<tr>
<td></td>
<td>Organisations which have given approval</td>
</tr>
<tr>
<td></td>
<td>Relationship between researchers and participants and organisations</td>
</tr>
<tr>
<td>Participant description</td>
<td>How and why participants are chosen</td>
</tr>
<tr>
<td></td>
<td>How participants are recruited</td>
</tr>
<tr>
<td></td>
<td>How many participants are to be recruited</td>
</tr>
<tr>
<td>Participant experience</td>
<td>What will happen to the participant, what will they have to do, what will they experience?</td>
</tr>
<tr>
<td></td>
<td>Benefits to individual, community, and contribution to knowledge</td>
</tr>
<tr>
<td></td>
<td>Risks to individual, community</td>
</tr>
<tr>
<td></td>
<td>Consequences of participation</td>
</tr>
<tr>
<td>Participant options</td>
<td>Alternatives to participation</td>
</tr>
<tr>
<td></td>
<td>Whether participation may be for part of project or only for whole of project</td>
</tr>
<tr>
<td></td>
<td>Whether any of the following will be provided: counselling, post research follow-up, or post research access to services, equipment or goods</td>
</tr>
<tr>
<td>Participants rights and responsibilities</td>
<td>That participation is voluntary</td>
</tr>
<tr>
<td>Handling of information</td>
<td>Handling of information details: How information will be accessed, collected, used, stored, and to whom data will be disclosed; Can participants withdraw their information, how, when; Confidentiality of information; Ownership of information; Subsequent use of information; Storage and disposal of information.</td>
</tr>
<tr>
<td>------------------------</td>
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</tr>
<tr>
<td>Financial issues</td>
<td>Financial issues details: How the project is funded; Declaration of any duality of interests; Compensation entitlements; Costs to participants; Payments, reimbursements to participants; Commercial application of results.</td>
</tr>
<tr>
<td>Results</td>
<td>Results details: What will participants be told, when and by whom; Will individual results be provided; What are the consequences of being told or not being told the results of research; How will results be reported/published; Ownership of intellectual property and commercial benefits.</td>
</tr>
<tr>
<td>Cessation</td>
<td>Cessation details: Circumstances under which the participation of an individual might cease; Circumstances under which the project might be terminated.</td>
</tr>
</tbody>
</table>

**Research Specific Elements**

Provision of information to participants about the following topics should be considered as may be relevant to the research project:

<table>
<thead>
<tr>
<th>Specific to project or participant group</th>
<th>Specific to project or participant group details: Additional issues to consider in participant information.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aboriginal and/or Torres Strait Islander peoples</td>
<td>Additional issues to consider in participant information details: Describe consultation process to date and involvement of leaders, whether ATSI status will be recorded.</td>
</tr>
</tbody>
</table>
Appendix C: Adapted ACNUD Scale
PARTICIPANT / INFORMATION SHEET AND CONSENT FORM

CLINICAL TRIAL

Using implementation intentions to increase safe sex practices among an Australian sample of men who have sex with men

Invitation
You are invited to participate in a research study into condom use among men who have sex with men (MSM).

The study is being conducted by Ben Andrews and will form the basis of a Master of Science thesis at The University of Sydney under the supervision of Dr Barbara Mullin (Senior Lecturer at the University of Sydney), Professor John de Wit (Director of the Centre for Social Research in Health), and Dr Kim Begley (Senior Clinical Psychologist / Clinical and Research Consultant at the Albion Centre).

Before you decide whether or not you wish to participate in this study, it is important for you to understand why the research is being done and what it will involve. Please take the time to read the following information carefully and discuss it with others if you wish.

Unprotected sex poses a risk of infection with HIV and other sexually transmitted infections (STIs). Unprotected anal sex poses the highest risk of HIV and STI infection. Condoms remain the best form of protection against HIV and STI infection.

If you think you have been exposed to HIV, a treatment known as PEP (post-exposure prophylaxis) may prevent you becoming infected - if you act quickly. You can access PEP at a sexual health centre or in the accident and emergency sections of most hospitals (open 24 hours). You may also wish to call the 24-hour PEP Hotline on 1800 PEP NOW (1800 737 668) (inside NSW).

1. What is the purpose of this study?
The purpose is to investigate what men who have sex with men think about various condom use behaviours such as accessing and using condoms, about their condom use practices and condom use planning. It also aims to see if there are any differences between HIV negative and HIV positive men in how they respond to these questions, and to see whether planning for condom use, and planning ability in general has any effect on future condom use.

2. Why have I been invited to participate in this study?
You are eligible to participate in this study because you may be accessing healthcare, attending venues, or using phone applications or internet sites that are frequented by adult men who have sex with men. If you are an adult male that has sex with men, then you are eligible to participate in this study.

3. What if I don’t want to take part in this study, or if I want to withdraw later?
Participation in this study is voluntary. It is completely up to you whether or not you participate. If you decide not to participate you will not be penalised in any way.

New information about the treatment being studied may become available during the course of the study. You will be kept informed of any significant new findings that may affect your willingness to continue in the study.

If you wish to withdraw from the study once it has started, you can do so at any time without having to give a reason. However, it may not be possible to withdraw your data from the study results if these have already had your identifying details removed.

4. What does this study involve?
This study will ask you to think about condoms, about your condom use practices and that of your peers, your HIV status and viral load, the HIV status of your sexual partners, and HIV antiretroviral drugs. All of these questions will be answered online. You will also be invited to complete the same survey three months later, and will be asked to provide an email in order to do this. These questions should take roughly 20 minutes to complete.
You may also be asked to describe when, where, and how you might plan to use condoms in the future if you intend to do so. You will be sent an email simply reminding you of this plan once per week.

Alternatively, you may be invited to regularly practice a computer task over a 3 month period. This task is called “The Tower of Hanoi” and requires you to shift discs between pegs in a planned and organised way. If you are asked to complete the “Tower of Hanoi” planning task, you will be asked to attempt this task four times per week online for 10-15 minutes.

It is possible that you will not be required to do either of these tasks and will simply be contacted again in 3 months time and asked the same questions as in the initial questionnaire.

The process of allocation is known as a “randomised trial”. As researchers sometimes don’t know which task will effect change the most, comparisons need to be made between the different tasks. To do this, study participants are put into groups and given the different tasks, and the results are compared to see whether one treatment is better. To ensure the groups are similar to start with, a computer allocates each study participant into a group randomly, like the flip of a coin. Neither the researcher nor the study participant can decide which treatment the participant receives.

Your email address will be attached to a participant number and kept on a list which will be stored securely and destroyed when the study is complete. You are not required to provide your name or address. All information is kept strictly confidential. The questionnaires should take approximately 20 minutes to complete. You will be asked to complete these twice: once at the beginning of the study, and again 3 months later.

If you agree to participate in this study, you will be asked to provide consent online by checking a box acknowledging this.

This study will be conducted over twelve months.

6. How is this study being paid for?
The study is being conducted as part of a Master of Science degree by Ben Andrew at The University of Sydney. Any costs incurred in carrying out the study will be covered by the university. No duality or conflict of interest has been identified by any of the investigators involved in this project. No money is paid directly to individual researchers.

6. Are there risks to me in taking part in this study?
It is possible that some of the questions asked might raise issues that you find difficult to deal with. If you experience any distress in participating in this study, please refer to the list of the following support services for assistance.

<table>
<thead>
<tr>
<th>Organisation</th>
<th>Contact</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Organisation</strong></td>
<td><strong>Contact</strong></td>
</tr>
<tr>
<td>Emergency Services</td>
<td>TEL: 000</td>
</tr>
<tr>
<td><strong>The Triple Zero (000) service is the quickest way to get the right emergency service to help you. It should be used to contact Police, Fire or Ambulance services in life threatening or emergency situations.</strong></td>
<td></td>
</tr>
<tr>
<td>Lifeline provides 24/7 crisis support and suicide prevention services.</td>
<td></td>
</tr>
<tr>
<td>Beyondblue</td>
<td>TEL: 1300 22 4636 Website: <a href="http://www.beyondblue.org.au/">http://www.beyondblue.org.au/</a> Email service on website.</td>
</tr>
<tr>
<td>Beyondblue is a bipartisan initiative of the Federal, State and Territory governments. Beyondblue provides a confidential 24/7 support service with trained mental health professionals.</td>
<td></td>
</tr>
<tr>
<td>The Albion Centre</td>
<td>TEL: (02) 9332 9600 Website: <a href="http://thealbioncentre.org.au/">http://thealbioncentre.org.au/</a></td>
</tr>
<tr>
<td>The Albion Centre is a community based, multidisciplinary centre dealing exclusively with HIV clinical management, counselling, research, prevention and education in Australia.</td>
<td></td>
</tr>
</tbody>
</table>

You may also wish to consult your usual medical doctor

7. What happens if I suffer injury or complications as a result of the study?
No injuries or complications are expected as a result of your participation in this study. In the unlikely event that this were to occur, please contact the South Eastern Sydney Local Health District Human Research Ethics Committee Research Support Office on 02 9382 3987, or email rcohen@seslh.health.nsw.gov.au and quote HREC 10/108.

6. Will I benefit from the study?
It is possible that if you plan how you might use condoms in the future, or practice the Tower of Hanoi Task regularly that you might increase the frequency of your condom use.

6. Will taking part in this study cost me anything, and will I be paid?
Participation in this study will not cost you anything. No reimbursement is provided for your participation in this study, monetary or otherwise.
9. Will taking part in this study cost me anything, and will I be paid? Participation in this study will not cost you anything. No reimbursement is provided for your participation in this study, monetary or otherwise.

10. How will my confidentiality be protected? Of the people involved in the study, only Ben Andrew and Dr Barbara Mullan will have access to the answers you provide and to your email address. The email address you provide is not expected to identify you; however, you may wish to provide an email that does not contain your name. Any information that is collected about you in connection with this study will remain confidential and will be disclosed only with your permission, or except as required by law. Only the researchers named above will have access to the information that you provide and results that will be held securely at The University of Sydney.

11. What happens with the results? If you give us your permission by providing your consent to participate in the study, we plan to discuss/publish the results within the Master of Science thesis, in peer-reviewed journals, and via presentations at academic conferences or other professional forums. The purpose of sharing this information is to add to the literature and knowledge regarding the sexual practices and beliefs of men who have sex with men.

In any publication, information will be provided in such a way that you cannot be identified. Results of the study will be provided to you via your provided email, if you wish.

12. What should I do if I want to discuss this study further before I decide? When you have read this information, you may contact the researcher, Ben Andrew, via email to discuss it with you and any queries you may have. If you would like to know more at any stage, please do not hesitate to contact him at band3679@uni.sydney.edu.au

13. Who should I contact if I have concerns about the conduct of this study? This study has been approved by the South Eastern Sydney Local Health District Human Research Ethics Committee. Any person with concerns or complaints about the conduct of this study should contact the Research Support Office which is nominated to receive complaints from research participants. You should contact them on 02 9382 3687, or email rrosslsdh@seslahs.health.nsw.gov.au and quote HREC 10/108.

The conduct of this study at The University of Sydney has been authorized by the Human Research Ethics Committee at the university. Any person with concerns or complaints about the conduct of this study may also contact the Manager, Human Ethics Administration, University of Sydney on +61 2 9353 6179 (Telephone); +61 2 9353 8177 (Facsimile) or rhe@humanetics@sydney.edu.au (Email).

Thank you for taking the time to consider this study.

If you wish to take part in it, please do so by checking the box that says "yes" below.

If you do not wish to take part in the study, please click "no" to exit.

- [ ] Yes
- [ ] No
Please pick the highest level of education you have completed, or the education level you are currently studying for

- Did not go to school
- Did not complete secondary school
- Secondary school
- Post-secondary non-tertiary education (e.g., TAFE)
- Bachelor degree
- Master degree
- Doctoral degree
DASS-21 Questionnaire. Please read each statement and select a number: 0, 1, 2, or 3, that indicates how much the statement applied to you over the past week. There are no right or wrong answers. Do not spend too much time on any statement.

The rating scale is as follows:

- 0 Did not apply to me at all
- 1 Applied to me to some degree, or some of the time
- 2 Applied to me a considerable degree, or a good part of the time
- 3 Applied to me very much, or most of the time

<table>
<thead>
<tr>
<th>Statement</th>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
</tr>
</thead>
<tbody>
<tr>
<td>I found it hard to wind down</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I was aware of a dryness in my mouth</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I couldn't seem to experience any positive feeling at all</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I experienced breathing difficulty (e.g., excessively rapid breathing, breathlessness in the absence of physical exertion)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I found it difficult to work up the initiative to do things</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I tended to over-react to situations</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I experienced trembling (e.g., in the hands)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I felt that I was using a lot of nervous energy</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I was worried about situations in which I might panic and make a fool of myself</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I felt that I had nothing to look forward to</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I found myself getting agitated</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I found it difficult to relax</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I felt down-hearted and blue</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I was irritable of anything that kept me from getting on with what I was doing</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I felt I was close to panic</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I was unable to become enthusiastic about anything</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I felt I wasn't worth much as a person</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I felt I was rather touchy</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I was aware of the action of my heart in the absence of physical exertion (e.g., sense of heart rate increase, heart missing a beat)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I felt scared without any good reason</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I felt that life was meaningless</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
The next section will ask you questions regarding your sexual activity over the past 3 months. We realise that this can be difficult to recall and ask that you give it your best guess.

Instructions for Filling out the Timeline Sex Calendar

Calendars have been found to be useful in helping people recall their sexual activity. We have provided a calendar to assist you with recalling your sexual activity—it provides some significant dates (e.g., Christmas) which may help you remember what you did over the past three months. It is to be used to assist your recall and you may refer to the calendar before completing the questions relevant to your anal sex activity. An example of how to fill out the calendar is also provided below.

Please note that we have provided a six month calendar as participants will begin the study on different dates but you will only need to refer to the past three months from the date that you complete the survey.

The following are instructions and tips for completing the record.

Instructions

1. It is important that you indicate a number for each anal sex act you engaged in over the past three months. Remember that you may engage in more than one anal sex act in one sexual encounter (e.g., you might be fucked and fuck someone else on the one occasion).

2. If there are weeks that you did not perform please indicate this with a ‘0’.

3. In filling out the record, please be as accurate as possible.

Tips

1. If you have a daily diary available, you can use it to help you recall your anal sex encounters.

2. Important dates have been listed on the calendar already. You can use the ‘notes’ box to write any personal events, such as birthdays, parties, and holidays, that may help you remember your anal sex encounters. Some people have regular sexual patterns and this can help them in filling out the calendar. For example, you may have a weekend/weekday change in your sexual activity, or a day on which you often engage in anal sex (e.g., going to a sauna on a particular night).

Remember that you only need to complete this for the last 3 months.

We realise it isn’t easy to recall things with 100% accuracy.

If you are not sure of the exact details of each sexual encounter, give it your best guess!

Please refer to the calendar below to assist you with your recall.
<table>
<thead>
<tr>
<th>MARCH 2014</th>
<th>MAY 2014</th>
<th>JULY 2014</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>Leap Day</td>
<td>Leap Day</td>
<td>2</td>
</tr>
<tr>
<td>9</td>
<td>10</td>
<td>3</td>
</tr>
<tr>
<td>16</td>
<td>17</td>
<td>4</td>
</tr>
<tr>
<td>23</td>
<td>24</td>
<td>5</td>
</tr>
<tr>
<td>30</td>
<td>31</td>
<td>6</td>
</tr>
<tr>
<td>APRIL 2014</td>
<td>JUNE 2014</td>
<td>AUGUST 2014</td>
</tr>
<tr>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>8</td>
<td>9</td>
<td>4</td>
</tr>
<tr>
<td>15</td>
<td>16</td>
<td>5</td>
</tr>
<tr>
<td>22</td>
<td>23</td>
<td>6</td>
</tr>
<tr>
<td>Easter Sunday</td>
<td>Easter Sunday</td>
<td>APAC Day</td>
</tr>
<tr>
<td>27</td>
<td>28</td>
<td>7</td>
</tr>
<tr>
<td></td>
<td></td>
<td>8</td>
</tr>
<tr>
<td></td>
<td>13</td>
<td>9</td>
</tr>
<tr>
<td></td>
<td>20</td>
<td>10</td>
</tr>
<tr>
<td></td>
<td>27</td>
<td>11</td>
</tr>
<tr>
<td></td>
<td>34</td>
<td>12</td>
</tr>
</tbody>
</table>

- 215
Please feel free to write any notes here that may assist you with your recall.

---

How many different men have you had anal sex with in the past 3 months?

---

In the past 3 months, how many times were you fucked **WITH A CONDOM** where your sexual partner was:

**HIV positive?**

---

**HIV negative?**

---

You did not know the HIV status of your partner?
In the past 3 months, how many times were you fucked WITHOUT A CONDOM where your sexual partner was:

HIV positive?

HIV negative?

You did not know the HIV status of your partner?

In the past 3 months, how many times did you fuck someone else WITH A CONDOM where your sexual partner was:

HIV positive?

HIV negative?

You did not know the HIV status of your partner?
In the past 3 months, how many times did you fuck someone else WITHOUT A CONDOM where your sexual partner was:

HIV positive?

HIV negative?

You did not know the HIV status of your partner?

This next section asks you questions about your thoughts and feelings regarding condoms
On the following section there will be questions, each with multiple choice responses that we would like you to answer. We are interested in what you think so please try and answer each question as honestly as you can. Please read each question carefully before you pick your response. There are no right or wrong answers, we are interested in your personal point of view. It may seem like we are asking you the same questions over and over again but we would appreciate you trying to answer each question as they are slightly different.

**Definitions**

**Accessing condoms:** This refers to the availability of condoms wherever you may be having sex, or in planning to have sex in the future. Depending on where and when you have sex, this may refer to the ability to purchase or access free condoms, for example: at a shop, at a bar, at your home, at a sex on premises venue, or at your sex partner’s home.

**Carrying condoms:** This refers to actually having condoms with you when you are intending to have sex, or when you think you might have sex. Depending on where and when you have sex, this might refer to taking condoms with you in your pocket or bag to your sex partners home, to a bed, to a sex on premises venue, or to a bar or party.

**Negotiating condom use:** When it is necessary to discuss condom use with your sex partner, this refers to discussing condom use before having sex. You may do this verbally (e.g. do you have a condom?) or non-verbally (e.g. getting a condom out). For example, this might occur on a website via internet chat or email, by text message, discussing your intention to use condoms with your sex partner in person, or by getting a condom out.

**Using condoms:** This refers to the physical act of using condoms; taking it out of the packet, putting it on your penis, and maintaining its use throughout sex. This may also refer to your sexual partner using a condom.

**Disposing of condoms:** This refers to the physical act of disposing of a condom while minimising risk of potential sexually transmitted disease infections. That is, taking it off without spilling and semen and putting it in a rubbish bin etc.

**Casual partner:** Someone you did not intend to have a committed romantic or exclusive sexual relationship with. For example, this might be someone you have anonymous sex with at a bar or sex on premises venue, some one that you hook-up with occasionally, a fuck buddy, or an internet hook up. This may be someone you only meet once, or more than once.

**How much do you agree or disagree with the following statement?**

(Carrying condoms refers to actually having condoms with you when you are intending to have sex, or when you think you might have sex. Depending on where and when you have sex, this might refer to taking condoms with you in your pocket or bag to your sex partners home, to a bed, to a sex on premises venue, or to a bar or party.)

<table>
<thead>
<tr>
<th>I intend to carry condoms in the future in case I have sex</th>
<th>1 Strongly disagree</th>
<th>2</th>
<th>3</th>
<th>4 Neither</th>
<th>5</th>
<th>6</th>
<th>7 Strongly agree</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>How certain are you about your intention to carry condoms in the future in case you have sex?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Certainty of intention rating</td>
</tr>
<tr>
<td>1 Very uncertain</td>
</tr>
<tr>
<td>1 Strongly disagree</td>
</tr>
</tbody>
</table>
How much do you agree or disagree with the following statement?  
(Using condoms refers to the physical act of using condoms; taking it out of the packet, putting it on your or your partner’s penis, and maintaining its use throughout sex. This may also refer to your partner using a condom.)

<table>
<thead>
<tr>
<th>1 strongly disagree</th>
<th>2</th>
<th>3</th>
<th>4 neither</th>
<th>5</th>
<th>6</th>
<th>7 strongly agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>I intend to use a condom every time I have sex in the future.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

How certain are you about your intention to use condoms in the future in case you have sex?

<table>
<thead>
<tr>
<th>1 very uncertain</th>
<th>2</th>
<th>3</th>
<th>4 neither</th>
<th>5</th>
<th>6</th>
<th>7 very certain</th>
</tr>
</thead>
<tbody>
<tr>
<td>Certainty of intention rating</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

How much do you agree or disagree with the following statement?  
(When it is necessary to discuss condom use with your sex partner, negotiating condom use refers to discussing condom use before having sex. You may do this verbally (e.g., do you have a condom?) or non-verbally (e.g., getting a condom out). For example, this might occur on a website via internet chat or email, by text message, discussing your intention to use condoms with your sex partner in person, or by getting a condom out.)

<table>
<thead>
<tr>
<th>1 strongly disagree</th>
<th>2</th>
<th>3</th>
<th>4 neither</th>
<th>5</th>
<th>6</th>
<th>7 strongly agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>I intend to negotiate using condoms in the future every time I have sex.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

How certain are you about your intention to negotiate using condoms in the future every time you have sex?

<table>
<thead>
<tr>
<th>1 very uncertain</th>
<th>2</th>
<th>3</th>
<th>4 neither</th>
<th>5</th>
<th>6</th>
<th>7 very certain</th>
</tr>
</thead>
<tbody>
<tr>
<td>Certainty of intention rating</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
## How much do you agree or disagree with the following statement?

(Disposing of condoms refers to the physical act of disposing of a condom while minimizing risk of potential sexually transmitted disease infections. That is, taking it off without spilling and avoiding and putting it in a rubbish bin etc.)

<table>
<thead>
<tr>
<th>1 strongly disagree</th>
<th>2</th>
<th>3</th>
<th>4 neither</th>
<th>5</th>
<th>6</th>
<th>7 strongly agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>I intend to dispose of a used condom every time I have sex in the future</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

## How certain are you about your intention to dispose of condoms in the future every time you have sex?

<table>
<thead>
<tr>
<th>1 very uncertain</th>
<th>2</th>
<th>3</th>
<th>4 neither</th>
<th>5</th>
<th>6</th>
<th>7 very certain</th>
</tr>
</thead>
<tbody>
<tr>
<td>Certainty of intention rating</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

## How much do you agree or disagree with the following statement?

(Accessing condoms refers to the availability of condoms wherever you may be having sex, or in planning to have sex in the future. Depending on where and when you have sex, this may refer to the ability to purchase or access free condoms, for example, at a shop, at a bar, at your home, at a sex on premises venue, or at your sex partner's home.)

<table>
<thead>
<tr>
<th>1 strongly disagree</th>
<th>2</th>
<th>3</th>
<th>4 neither</th>
<th>5</th>
<th>6</th>
<th>7 strongly agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>I intend to access condoms every time I have sex in the future</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

## How certain are you about your intention to access condoms in the future every time you have sex?

<table>
<thead>
<tr>
<th>1 very uncertain</th>
<th>2</th>
<th>3</th>
<th>4 neither</th>
<th>5</th>
<th>6</th>
<th>7 very certain</th>
</tr>
</thead>
<tbody>
<tr>
<td>Certainty of intention rating</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
How true or false do you think the following statements are?

<table>
<thead>
<tr>
<th>Statement</th>
<th>1 False</th>
<th>2</th>
<th>3</th>
<th>4 Neither</th>
<th>5</th>
<th>6</th>
<th>7 Truth</th>
</tr>
</thead>
<tbody>
<tr>
<td>Carrying condoms makes me feel self-conscious</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Accessing condoms makes me feel self-conscious</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Negotiating condom use makes me feel awkward</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Using condoms makes me feel safe</td>
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<tr>
<td>Accessing condoms makes me feel embarrassed</td>
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<tr>
<td>Negotiating condom use makes me feel embarrassed</td>
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<tr>
<td>Using condoms makes me feel spontaneous</td>
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<tr>
<td>Negotiating condom use makes me feel trusty</td>
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<tr>
<td>Carrying condoms makes me feel responsible</td>
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<tr>
<td>Disposing of a used condom makes me feel clean</td>
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<tr>
<td>Accessing condoms makes me feel awkward</td>
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<tr>
<td>Carrying condoms makes me feel embarrassed</td>
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<tr>
<td>Disposing of a used condom makes me feel embarrassed</td>
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<tr>
<td>Disposing of a used condom makes me feel pleasant</td>
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</tbody>
</table>

What do you think about performing the following condom behaviours?

<table>
<thead>
<tr>
<th>Behaviour</th>
<th>1 Difficult</th>
<th>2</th>
<th>3</th>
<th>4 Neither</th>
<th>5</th>
<th>6</th>
<th>7 Easy</th>
</tr>
</thead>
<tbody>
<tr>
<td>For me to use condoms during anal intercourse is</td>
<td></td>
<td></td>
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<td></td>
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<td></td>
<td></td>
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<tr>
<td>For me to dispose of condoms after sexual intercourse is</td>
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<tr>
<td>For me to negotiate using condoms before having sex is</td>
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<tr>
<td>For me to carry condoms in case I have sex is</td>
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<tr>
<td>For me to access condoms in advance of having sex is</td>
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</tr>
</tbody>
</table>

Survey Powered By Qualtrics
<table>
<thead>
<tr>
<th>Statement</th>
<th>1 strongly disagree</th>
<th>2</th>
<th>3</th>
<th>4 neither</th>
<th>5</th>
<th>6</th>
<th>7 strongly agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>My family thinks that I should use condoms</td>
<td></td>
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<tr>
<td>My sexual partner(s) think(s) that I should use condoms</td>
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<tr>
<td>I think I should use condoms</td>
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<tr>
<td>My sexual partner(s) think(s) that I should dispose of a condom</td>
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<tr>
<td>Health care professionals think that I should carry condoms</td>
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<tr>
<td>My family thinks that I should access condoms</td>
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<tr>
<td>I think that I should dispose of a condom after use</td>
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<tr>
<td>I think that I should access condoms</td>
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<td>I think that I should carry condoms</td>
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<td>My sexual partner(s) think(s) that I should carry condoms</td>
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<tr>
<td>I think that I should negotiate with a partner to use condoms</td>
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</tr>
</tbody>
</table>
### How much do you agree or disagree with the following statements about the five condom behaviours?

<table>
<thead>
<tr>
<th>Statement</th>
<th>1 strongly disagree</th>
<th>2</th>
<th>3</th>
<th>4 neither</th>
<th>5</th>
<th>6</th>
<th>7 strongly agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>Negotiating using condoms gives me control</td>
<td></td>
<td></td>
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<tr>
<td>Carrying condoms makes you look promiscuous</td>
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<tr>
<td>Using condoms is a safe thing to do</td>
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<tr>
<td>There is no stigma associated with accessing condoms</td>
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<tr>
<td>Carrying condoms will ultimately avoid getting or passing on HIV</td>
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<td></td>
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<tr>
<td>You are more likely to be protected from being infected with HIV if you negotiate using condoms</td>
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<tr>
<td>Carrying condoms demonstrates that you are prepared if the opportunity for sex arises</td>
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<tr>
<td>Using a condom means I get to have sex</td>
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<tr>
<td>It is hygienic disposing of condoms</td>
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<tr>
<td>Using condoms will avoid getting or passing on HIV</td>
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<tr>
<td>Ill like the convenience of accessing condoms</td>
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<tr>
<td>Disposing of condoms interrupts the sexual act</td>
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</tr>
</tbody>
</table>

### Please estimate the number of times you have and have not performed the five condom behaviours in the past three months

<table>
<thead>
<tr>
<th>Behaviour</th>
<th>Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>Have carried condoms</td>
<td></td>
</tr>
<tr>
<td>Have not carried condoms</td>
<td></td>
</tr>
<tr>
<td>Have used condoms</td>
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<tr>
<td>Have not used condoms</td>
<td></td>
</tr>
<tr>
<td>Have negotiated condom use</td>
<td></td>
</tr>
<tr>
<td>Have not negotiated condom use</td>
<td></td>
</tr>
<tr>
<td>Have disposed of a condom</td>
<td></td>
</tr>
<tr>
<td>Have not disposed of a condom</td>
<td></td>
</tr>
<tr>
<td>Have accessed condoms</td>
<td></td>
</tr>
<tr>
<td>Have not accessed condoms</td>
<td></td>
</tr>
</tbody>
</table>
### How much do you agree or disagree with the following statements about how much control you have over performing the five condom behaviours?

<table>
<thead>
<tr>
<th>Statement</th>
<th>1 strongly disagree</th>
<th>2</th>
<th>3</th>
<th>4 neither</th>
<th>5</th>
<th>6</th>
<th>7 strongly agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>I am more likely to negotiate using condoms if my sexual partner wants me too</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>I am more likely to carry condoms if I am in a new or casual relationship</td>
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</tr>
<tr>
<td>I am more likely to access condoms if I am in close proximity to them (e.g. near a chemist or in a venue that provides them)</td>
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<tr>
<td>I am more likely to dispose of a condom if my culture promotes this</td>
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<tr>
<td>I am less likely to access condoms if it is late at night</td>
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<tr>
<td>I am more likely to negotiate using condoms if I am in a new or casual relationship</td>
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<tr>
<td>I am more likely to negotiate using condoms if I have experience doing this</td>
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</tr>
<tr>
<td>I am more likely to carry condoms if I intend to use them</td>
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<tr>
<td>I am more likely to dispose of a condom if there is a bin closer</td>
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<tr>
<td>I am more likely to dispose of a condom if I am at home</td>
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</tr>
<tr>
<td>I am more likely to use condoms if I am in a new or casual relationship</td>
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<tr>
<td>I am more likely to access condoms if I have a need for them</td>
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<tr>
<td>I am more likely to use a condom if my partner also wants to</td>
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</tbody>
</table>
### How much do you agree or disagree with the following statements about how much control you have over performing the five condom behaviours?

<table>
<thead>
<tr>
<th>Statement</th>
<th>1 strongly disagree</th>
<th>2</th>
<th>3</th>
<th>4 neither</th>
<th>5</th>
<th>6</th>
<th>7 strongly agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>I am more likely to negotiate using condoms if my sexual partner wants me to</td>
<td>0</td>
<td></td>
<td></td>
<td>0</td>
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<td></td>
<td>0</td>
</tr>
<tr>
<td>I am more likely to carry condoms if I am in a new or casual relationship</td>
<td>0</td>
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<td>0</td>
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<tr>
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<td>0</td>
</tr>
<tr>
<td>I am less likely to access condoms if it is late at night</td>
<td>0</td>
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<td>0</td>
</tr>
<tr>
<td>I am more likely to negotiate using condoms if I am in a new or casual relationship</td>
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<td>0</td>
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<td></td>
<td>0</td>
</tr>
<tr>
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<td></td>
<td>0</td>
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<td></td>
<td>0</td>
</tr>
<tr>
<td>I am more likely to carry condoms if I intend to use them</td>
<td>0</td>
<td></td>
<td></td>
<td>0</td>
<td></td>
<td></td>
<td>0</td>
</tr>
<tr>
<td>I am more likely to dispose of a condom if there is a bin close</td>
<td>0</td>
<td></td>
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<td>0</td>
<td></td>
<td></td>
<td>0</td>
</tr>
<tr>
<td>I am more likely to dispose of a condom if I am at home</td>
<td>0</td>
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<td>0</td>
</tr>
<tr>
<td>I am more likely to use condoms if I am in a new or casual relationship</td>
<td>0</td>
<td></td>
<td></td>
<td>0</td>
<td></td>
<td></td>
<td>0</td>
</tr>
<tr>
<td>I am more likely to access condoms if I have a need for them</td>
<td>0</td>
<td></td>
<td></td>
<td>0</td>
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<td>0</td>
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</tr>
</tbody>
</table>

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### How much do you agree or disagree with the following statements with the following statements about your plans to perform the five condom behaviours?

<table>
<thead>
<tr>
<th>Statement</th>
<th>1 strongly disagree</th>
<th>2</th>
<th>3</th>
<th>4 neither</th>
<th>5</th>
<th>6</th>
<th>7 strongly agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>I plan to use a condom every time I have sex in the future</td>
<td>0</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>I plan to access a condom every time I have sex in the future</td>
<td>0</td>
<td></td>
<td></td>
<td>0</td>
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<td>0</td>
</tr>
<tr>
<td>I plan to negotiate using condoms in the future every time I have sex</td>
<td>0</td>
<td></td>
<td></td>
<td>0</td>
<td></td>
<td></td>
<td>0</td>
</tr>
<tr>
<td>I plan to dispose of a used condom every time I have sex in the future</td>
<td>0</td>
<td></td>
<td></td>
<td>0</td>
<td></td>
<td></td>
<td>0</td>
</tr>
<tr>
<td>I plan to carry condoms in the future in case I have sex</td>
<td>0</td>
<td></td>
<td></td>
<td>0</td>
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<td>0</td>
</tr>
</tbody>
</table>
Have you ever accessed condoms?
- Yes
- No

Have you ever carried condoms?
- Yes
- No

Have you ever disposed of condoms?
- Yes
- No
Have you ever negotiated condom use?

- Yes
- No

Have you ever used condoms?

- Yes
- No

How much do you agree or disagree with the following statements about performing the five condom behaviours?

<table>
<thead>
<tr>
<th>Statement</th>
<th>1 strongly disagree</th>
<th>2</th>
<th>3</th>
<th>4 neither</th>
<th>5</th>
<th>6</th>
<th>7 strongly agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>It is up to me whether or not I carry condoms in case I have sex.</td>
<td></td>
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<tr>
<td>It is up to me whether or not I dispose of a condom after use.</td>
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<tr>
<td>It is up to me whether or not I use condoms during sexual intercourse.</td>
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<tr>
<td>It is up to me whether or not I access condoms in advance of having sex.</td>
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</tr>
<tr>
<td>It is up to me whether or not I negotiate to use a condom before having sex</td>
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</tbody>
</table>
The next section asks you questions regarding your HIV status

What is your HIV status?
- HIV Positive
- HIV negative
- I don't know my HIV status

Are you currently taking antiretroviral drugs to treat HIV?
- Yes
- No

Do you know your current HIV blood plasma viral load?
- Yes
- No
What is your current HIV blood plasma viral load?

The next question asks you to create a plan regarding future condom use.

Thinking about the reasons why you might not have used condoms during anal sex where you would have liked to, please write in the box provided how you might alter this in the future, being sure to specify, WHEN, WHERE and HOW you would go about this.

Please remember there is no right or wrong answer, and that many people will differ on what they would write here.
Appendix D: Original ACNUD Scale
# ACNUD condom study

## 1. Information Sheet (version 1 12/08/10)

**Title of Project:** A cross-sectional investigation of condom beliefs using the ACNUD scale

**Researcher:** Jude Hancock

You are being invited to take part in a research study. Before you decide if you would like to take part, it is important that you understand why the research is being done and what it will involve. Please take time to read the following information carefully and discuss it with others if you wish. Please email the researcher if there is anything that is not clear or if you would like more information (contact details below). Take time to decide whether or not you wish to take part. Thank you for reading this.

**What is the purpose of this study?**

This study is part of a doctoral programme exploring safer sex behaviours. This study will ask you to think about condoms (or femidoms or dental dams) and requires you to answer questions. The study aims to find out what people think about various condom behaviours such as accessing and using condoms. It does not matter if you have never used a condom as the study is asking about what you think about condoms and not your experience with them. Therefore it is important that you are honest in your answers and try to answer each question you are given.

**Why have I been chosen?**

The researcher hopes to gather opinions from a wide variety of people and appreciates you taking the time to click on the survey link. Because of your age you may well have a different perspective about condoms than someone younger or older than you. Furthermore, you may or may not have experience with using condoms (or femidoms or dental dams) and this is important as we need to know the opinions from people who have and have not used condoms.

**Do I have to take part?**

No. You are under no obligation to take part. If you decide to participate, then you may keep this information (remember to print it if you would like to keep a copy). You will be asked to complete a consent form when you move to the next page. You will however be free to withdraw at any time, without giving a reason, and without any consequences, should you change your mind.

**What will happen to me if I take part?**

You will be asked to complete an online survey that will take you about 20-30 minutes to complete. The survey will ask you to think about condoms (or femidoms or dental dams) and choose the response you most agree with in answer to each question you are given. At the end of the survey you will be asked if you would like to receive an invite to a future follow-up study where you will participate in an anonymous online safer sex intervention. You are not obliged to receive this invite or to take part if you do receive the invite.

**Expenses and payments**

There is no payment associated with your participation.

**What do I have to do?**

You will be required to answer a series of questions about condoms (or femidoms or dental dams). All questions will be a multiple choice answers and you will choose the answer you most agree with in answer to each question you are given. Before the questionnaire starts there will be a definition of what condoms, femidoms and dental dams are to help you. Your opinions are unique to you and the researcher would be grateful if you would share these. You will only have to answer each question once. You are also able to finish the survey before the end if you do not want to carry on.
ACNUD condom study

What are the possible disadvantages and risks of taking part?
The greatest disadvantage of taking part is the impact on your time. It is possible that some of the questions asked might raise issues that you find difficult to deal with. If you have any concerns about the questions you have answered there will be a list of support available to you at the end of the survey. There will be no negative consequences for you as a result of your participation. The Coventry University Faculty of Health and Life Sciences Research Ethics Committee have reviewed this study.

What are the possible benefits of taking part?
You will be contributing to a programme of research that will culminate in the development of an intervention that is hoped will help people to have safer sex. Therefore it is likely that you will have some influence on this intervention with the answers you give to the questions, people who complete the intervention in the future may benefit from your feedback.

What happens when the research study stops?
The answers that you give to each question will be added to those given by other people who have taken part. The answers that all people give will be subjected to statistical analysis. This data will be used to create an online safer sex intervention. No-one will be able to identify you, as we will ask for you to create a unique identifier at the start of the survey, then once all the data is collected you will be assigned a participant number. It will be possible for you to obtain a written copy of the results by indicating that you would like to do this on the final pages of the survey (in order for you to do this it will be necessary for you to provide your name and email address). Alternatively you will be able to go to the following website where a copy of the report will be available www.healthinterventions.co.uk. The results are likely to be available in September 2011, if you decide to receive a copy of the report or to opt in to receive information about future research your personal details will be stored separately from the questionnaire responses you provide. It is also possible that the results from the study may be written up as academic papers, or presented at academic conferences. In all instances, it will be grouped data that are of interest, not individual opinions.

What will happen if I don’t want to continue with the study?
You are free to withdraw from the study at any time by exiting the online survey. In addition, up to four weeks after you have completed the survey if you decide you do not want your data to be used you can contact the researcher (see details below) so that your data can be removed. The researcher will then destroy all information collected about you.
ACNUD condom study

What if there is a problem?
It is unlikely that there will be a problem during the course of your participation in this research study. However, in the unlikely event of a problem with the research please inform the researcher who will try to resolve the matter and if necessary provide you with details of relevant support services. Alternatively you can contact, Dr Katherine Brown, Department of Psychology, Coventry University, Priory Street, Coventry, CV1 5FB (k.brown@coventry.ac.uk; phone: 024 7658 8209). If you are still not happy, you may contact, the Coventry University Ethics Committee Chair, Professor Ian Marshall in writing at AB12H, Coventry University, Priory Street, Coventry, CV1 5FB.

Complaints
If after participating in the study, you wish to make a complaint or comment regarding the professional conduct of the study, please, in the first instance contact the researcher:

Harm
There is no anticipated risk of harm involved with participation in this study. There are no compensation arrangements for participation in this research.

Will my taking part in the study be kept confidential?
All information that is collected about you during the course of the research will be kept strictly confidential. It will not be possible for anyone to identify your particular responses, as at the start of the study you will create your own unique identifier (the method for this will be explained when you log onto the survey) and from this point on the researcher will not know your identity, and no reference to your unique identifier will be made in the write up of research results. In any written reports the researcher will assign you a new unique identifier by which you will be identified. This will be a letter and a number such as P1, which will help the researcher know that you were for example, participant number one, hence P1. In this way anonymity will be maintained. Your completed survey and contact details (if given) will be held securely and all data will be processed in accordance with the 1998 Data Protection Act.

Contact details:
Researcher’s name: Jude Hancock
Email: hannoc16@uni.coventry.ac.uk – preferred method of contact.

Research Student’s Director of Studies
Director of Studies name: Dr Katherine Brown
Email: K.Brown@coventry.ac.uk – preferred method of contact.
Postal Address: Department of Psychology, Coventry University, Priory Street, Coventry, CV1 5FB
Phone: 024 7658 8209

2. Consent form V1 (12/08/10)
ACNUD condom study

1. I confirm that I have read and understood the participant information sheet for the above study. I have had the opportunity to consider the information, ask questions and have had these questions answered satisfactorily.

2. I understand that my participation is voluntary and that I am free to withdraw at any time without giving a reason.

3. I understand that any information I provide will be kept confidential and that my identity will be kept anonymous.

4. I understand that the data will be treated according to the British Psychological Society Code of Ethics.

5. I understand that the information I provide may be used and analysed for research purposes and the findings may be published in an academic journal.

6. I understand that I may be asked to take part in an additional component of the research project and that I am under no obligation to take part.

7. I understand that I can request that any information I provide will be destroyed upon request.

8. I agree to take part in the above study.

☐ Yes, I agree to the above consent form

3. Instructions
ACNUD condom study

This questionnaire is split into three sections:

1 – Demographic information e.g. your age, whether you are male or female.

2 – Your preferred barrier method e.g. male condom, female condom or dental dam.

3 – Your thoughts about five condom behaviours (ACNUD)

Below are definitions of the five condom behaviours.

Accessing may mean purchasing, for example, from a shop or vending machine. It can also mean getting these for free, for example, in health centres or from your friends.

Carrying means the ability to physically access condoms (or femidoms or dental dams). This means you may carry these in your wallet/handbag or prefer not to physically carry them but keep some in a safe place at home.

Negotiating means communicating that you want to use a condom (or femidom or dental dam). You may do this verbally (e.g. do you have a condom) or non-verbally (e.g. getting a condom out).

Using means the physical act of using a condom (or femidom or dental dam).

DISPOSING means the physical act of disposing of a condom (or femidom or dental dam).

Please remember that all of your responses are strictly confidential. Each page will have instructions on how to answer each question. Please read each question carefully and answer it as truthfully as you can – sometimes people choose answers that they think others would want them to or would find most acceptable but we need to know how you really think and feel. There are no correct or incorrect responses, we are simply interested in your personal point of view.

Thank you for your participation in this study.

To help you complete the questionnaire an example is shown below. All questions will follow the same format.

1. An example

Please think about how accessing condoms makes you feel and respond to each question. The higher the score you give the more you agree to the feeling.

Accessing condoms makes me feel

<table>
<thead>
<tr>
<th>Accessing condoms makes me feel elated</th>
<th>1 - Not at all</th>
<th>2</th>
<th>3</th>
<th>4 - Neither</th>
<th>5</th>
<th>6</th>
<th>7 - Very much</th>
</tr>
</thead>
</table>

In the example if you had chosen number 7 you would have responded that accessing condoms make you feel very elated. If you had chosen number 1 you would have responded that accessing condoms does not make you feel elated at all.

4. Demographics
### ACNUD condom study

1. Please create a unique identifier for yourself by putting in your day and month of birth and the first three letters of your mother's maiden name.

   e.g. 28/02/FUR

2. Gender - are you:
   - Male
   - Female

3. Age - how old are you?

<table>
<thead>
<tr>
<th>Age</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
</tr>
</tbody>
</table>

4. How would you describe your ethnic origin?

<table>
<thead>
<tr>
<th>Ethnicity</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
</tr>
</tbody>
</table>

5. Please pick your highest level of education or the education level you are currently studying for.

<table>
<thead>
<tr>
<th>Level</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
</tr>
</tbody>
</table>

6. Do you have religious beliefs?

   - Yes – I have religious beliefs and I currently practice them
   - Yes – I have religious beliefs but I do not currently practice them
   - No – I do not have any religious beliefs
ACNUD condom study

7. Sexual Orientation.
   To help you answer this question definitions of each category are provided.

   Heterosexuals are individuals whose affectional/erotic attractions are to members of the other gender.

   Gay (Gay male/Lesbian) are individuals whose affectional/erotic attractions are to members of the same gender.

   Bisexuals are individuals whose affectional/erotic attractions are to both men and women.

   Please answer the question in relation to how you feel about yourself.
   - Heterosexual
   - Gay male (I am a man and I am attracted to other men)
   - Lesbian (I am a woman and I am attracted to other women)
   - Bisexual

8. How would you describe your relationship status?
   - Single
   - Married/Civil Partner
   - Divorced/Person whose Civil Partnership has been dissolved
   - Widowed/Surviving Civil Partner
   - Separated
   - In an open/casual relationship
   - I have a long-term partner
ACNUD condom study

9. To help you answer the question on sexual experience definitions of each category are provided.

Virgin - we would normally consider somebody a virgin if they have not had sex where a penis enters another person’s anus or vagina, though we understand people may have different interpretations.

Non-Virgin - we would normally consider somebody no longer a virgin if they have had sex whereby a penis enters another person’s anus or vagina, though we understand people may have different interpretations.

Please answer the question in relation to how you feel about yourself.

☐ Virgin
☐ Non-Virgin

5. Condoms, Femidoms and Dental Dams
ACNUD condom study

Male condom

A male condom is a flexible sheath, usually made of rubber or latex, designed to cover the penis during sexual intercourse for contraceptive purposes or as a means of preventing sexually transmitted disease during penetrative or oral intercourse.
Femidom

A femidom is a similar device to a condom, consisting of loose-fitting polyurethane sheath closed at one end that is inserted intravaginally before sexual intercourse. It is also called a female condom.
ACNUD condom study

Dental Dam

A dental dam is a flexible square, usually made of thin rubber or latex, designed to cover the vagina or anus as a means of preventing sexually transmitted diseases during oral intercourse.

1. For the purpose of this survey the terms ‘condoms’ will be used to cover the words condom, femidom and dental dam. Before you start to answer questions please pick the safer sex method from the three described that you would be most likely to use in the future. From then on please think about this method when you answer the questions.

- [ ] Condom
- [ ] Femidom
- [ ] Dental dam
**ACNUD condom study**

On the following page there will be questions each with multiple choice responses that we would like you to answer. Although all the questions have condom in the title we recognise that you may be thinking about a femidom or a dental dam instead and this is ok. We are interested in what you think so please try and answer each question as honestly as you can. Please read each question carefully before you pick your response. There are no right or wrong answers; we are interested in your personal point of view. It may seem like we are asking you the same questions over and over again but we would appreciate you trying to answer each question as they are slightly different.

### 6. ACNUD

#### 1. How much do you agree or disagree with the following statements about your intention to perform the five condom behaviours?

<table>
<thead>
<tr>
<th>1 - Strongly disagree</th>
<th>2</th>
<th>3</th>
<th>4 - Neither</th>
<th>5</th>
<th>6</th>
<th>7 - Strongly agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>I intend to carry condoms in the future in case I have sex</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I intend to use a condom every time I have sex in the future</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I intend to negotiate using condoms in the future every time I have sex</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I intend to dispose of a used condom every time I have sex in the future</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I intend to access condoms every time I have sex in the future</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
## ACNUD condom study

### 2. How do performing these five condoms behaviours make you feel?

<table>
<thead>
<tr>
<th>Behaviour</th>
<th>1 - Not at all</th>
<th>2</th>
<th>3</th>
<th>4 - Neither</th>
<th>5</th>
<th>6</th>
<th>7 - Very much</th>
</tr>
</thead>
<tbody>
<tr>
<td>Carrying condoms makes me feel self-conscious</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>Accessing condoms makes me feel self-conscious</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>Negotiating condom use makes me feel awkward</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>Using condoms makes me feel safe</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>Accessing condoms makes me feel embarrassed</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>Negotiating condom use makes me feel embarrassed</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>Using condoms makes me feel embarrassed</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>Using condoms makes me feel spontaneous</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>Negotiating condom use makes me feel trustworthy</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>Carrying condoms makes me feel responsible</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>Disposing of a used condom makes me feel clean</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>Accessing condoms makes me feel awkward</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>Carrying condoms makes me feel embarrassed</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>Disposing of a used condom makes me feel embarrassed</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
</tbody>
</table>

### 3. What do you think about performing the following condom behaviours?

<table>
<thead>
<tr>
<th>Behaviour</th>
<th>1 - Extremely bad</th>
<th>2</th>
<th>3</th>
<th>4 - Neither</th>
<th>5</th>
<th>6</th>
<th>7 - Extremely good</th>
</tr>
</thead>
<tbody>
<tr>
<td>For me to use condoms during sexual intercourse is</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>For me to dispose of condoms after sexual intercourse is</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>For me to negotiate using condoms before having sex is</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>For me to carry condoms in case I have sex is</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>For me to access condoms in advance of having sex is</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
</tbody>
</table>
## ACNUD condom study

4. How much do you agree or disagree with the following statements about the five condom behaviours?

<table>
<thead>
<tr>
<th>Statement</th>
<th>1 - Strongly disagree</th>
<th>2</th>
<th>3</th>
<th>4 - Neither</th>
<th>5</th>
<th>6</th>
<th>7 - Strongly agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>Negotiating using condoms gives me control</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Carrying condoms makes you look like you’re ‘after it’</td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>It is harder for a female to negotiate using condoms</td>
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</tr>
<tr>
<td>It is harder for females to access condoms</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Using condoms is a safe thing to do</td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>There is no stigma associated with accessing condoms</td>
<td></td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Carrying condoms will ultimately avoid getting a sexually transmitted disease</td>
<td></td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>You are more likely to be protected from sexually transmitted diseases if you negotiate using condoms</td>
<td></td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Carrying condoms demonstrates that you are prepared if the opportunity for sex arises</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Using a condom means I get to have sex</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>It is hygienic disposing of condoms</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Using condoms will avoid getting a sexually transmitted disease</td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>It is a man’s job to dispose of a used condom</td>
<td></td>
<td></td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>I like the convenience of accessing condoms</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Disposing of condoms interrupts the sexual act</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
5. Please estimate how often you have performed the five condom behaviours in the past month

<table>
<thead>
<tr>
<th>Behaviour</th>
<th>Number of times in past month</th>
</tr>
</thead>
<tbody>
<tr>
<td>Carried condoms</td>
<td></td>
</tr>
<tr>
<td>Used condoms</td>
<td></td>
</tr>
<tr>
<td>Negotiated condom use</td>
<td></td>
</tr>
<tr>
<td>Disposed of a used condom</td>
<td></td>
</tr>
<tr>
<td>Accessed condoms</td>
<td></td>
</tr>
</tbody>
</table>

6. How much do you agree or disagree with the following statements about performing the five condom behaviours and what other people think?

<table>
<thead>
<tr>
<th>Statement</th>
<th>1 - Strongly disagree</th>
<th>2</th>
<th>3</th>
<th>4 - Neither</th>
<th>5</th>
<th>6</th>
<th>7 - Strongly agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>My family thinks that I should use condoms</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>My sexual partner thinks that I should use condoms</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>My religion supports negotiation with a partner to use condoms</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I think I should use condoms</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>My sexual partner thinks that I should dispose of a condom after use</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Health care professionals think that I should negotiate with a partner to use condoms</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Health care professionals think that I should carry condoms</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>My family thinks that I should access condoms</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I think that I should dispose of a condom after use</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>My religion supports me disposing of a condom after use</td>
<td></td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>I think that I should access condoms</td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>My religion supports me accessing condoms</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I think that I should carry condoms</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>My sexual partner thinks that I should carry condoms</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I think that I should negotiate with a partner to use condoms</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### ACNUD condom study

7. How much do you agree or disagree with the following statements about the five condom behaviours?

<table>
<thead>
<tr>
<th>Response</th>
<th>1 - Strongly disagree</th>
<th>2</th>
<th>3</th>
<th>4 - Neither</th>
<th>5</th>
<th>6</th>
<th>7 - Strongly agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>I feel social pressure to assess condoms</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I feel social pressure to carry condoms</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I feel social pressure to dispose of condoms</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I feel social pressure to use condoms</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I feel social pressure to negotiate using a condom</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
## ACNUD condom study

8. How much do you agree or disagree with the following statements about how much control you think you have over performing the five condom behaviours?

<table>
<thead>
<tr>
<th>Statement</th>
<th>1 - Strongly disagree</th>
<th>2</th>
<th>3</th>
<th>4 - Neither</th>
<th>5</th>
<th>6</th>
<th>7 - Strongly agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>I am more likely to negotiate using condoms if my sexual partner wants me to</td>
<td>○</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I am more likely to carry condoms if I am in a new or casual relationship</td>
<td>○</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I am more likely to carry condoms if my sexual partner wants me to</td>
<td>○</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I am more likely to use a condom if my religion promotes this</td>
<td>○</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I am more likely to access condoms if I am in close proximity to a vending machine</td>
<td>○</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I am more likely to dispose of a condom if my culture promotes this</td>
<td>○</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I am less likely to access condoms if it is late at night</td>
<td>○</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I am more likely to negotiate using condoms if I am in a new or casual relationship</td>
<td>○</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I am more likely to negotiate using condoms if I have experience doing this</td>
<td>○</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I am more likely to carry condoms if I intend to use them</td>
<td>○</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I am more likely to dispose of a condom if there is a bin close</td>
<td>○</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I am more likely to dispose of a condom if I am at home</td>
<td>○</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I am more likely to use condoms if I am in a new or casual relationship</td>
<td>○</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I am more likely to access condoms if I have a need for them</td>
<td>○</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I am more likely to use a condom if my partner also wants to</td>
<td>○</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
## ACNUD condom study

### 9. How much do you agree or disagree with the following statements about your plans to perform the five condom behaviours?

<table>
<thead>
<tr>
<th>Statement</th>
<th>1 - Strongly disagree</th>
<th>2</th>
<th>3</th>
<th>4 - Neither</th>
<th>5</th>
<th>6</th>
<th>7 - Strongly agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>I plan to use a condom every time I have sex in the future</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I plan to access condoms every time I have sex in the future</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I plan to negotiate using condoms in the future every time I have sex</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I plan to dispose of a used condom every time I have sex in the future</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I plan to carry condoms in the future in case I have sex</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### 10. Have you ever

<table>
<thead>
<tr>
<th>Action</th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>Accessed condoms</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Carried condoms</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Disposed of a used condom</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Negotiated condom use</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Used condoms</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### 11. How much do you agree or disagree with the following statements about performing the five condom behaviours?

<table>
<thead>
<tr>
<th>Statement</th>
<th>1 - Strongly disagree</th>
<th>2</th>
<th>3</th>
<th>4 - Neither</th>
<th>5</th>
<th>6</th>
<th>7 - Strongly agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>It is up to me whether or not I carry condoms in case I have sex</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>It is up to me whether or not I dispose of a condom after use</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>It is up to me whether or not I use condoms during sexual intercourse</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>It is up to me whether or not I access condoms in advance of having sex</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>It is up to me whether or not I negotiate to use a condom before having sex</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### 7. Thank you
### ACNUD condom study

Thank you very much for taking part in this piece of research. Your contribution has been very important to us.

We will download your data and be analysing your responses alongside all the other participants’ data to decide what are the key topics that need to be addressed in the online intervention.

If you have any questions about this or anything else to do with this research then please feel free to ask. We will be more than happy to answer any questions we can. Alternatively, if you think of something later and wish to get in touch with us, you can do so using the contact details provided below (please remember to write this down before you go to the next page of the survey).

Jude Hancock  
Applied Research Centre Health and Lifestyle Interventions  
hancock6@uni.coventry.ac.uk

1. If you would like to receive an invite to take part in the online intervention please provide your email address. Remember that you are not obliged to receive this invite or to take part if you do receive the invite.

   ![Email Address Input]

2. If you have provided your email address only to received a copy of the findings from this study please state this here.

   ![Email Address Input]

### 8. Further support
ACNUD condom study

If you wish to seek further advice or support about sexual health issues below is a list of sources of help, advice and information. There are details of websites, help lines and instructions on how to find your nearest drop-in centre.

How to find your nearest drop-in centre

Go to the NHS website www.nhs.uk
Click on "find and choose services"
Click on "sexual health" (Please note you could use the walk in centre option as well)
In the search box type in your nearest town or city for a list of all drop-in centres available to you.

Remember you can always book an appointment with your own GP, its free and confidential.

Useful websites

www.nhs.uk/worthtalkingabout
www.fpa.org.uk
www.brook.org.uk
www.nothinking.co.uk
www.bpas.org

Telephone numbers

Family Planning Association 0845 122 8690
Brook Advisory Centre 0808 802 1234

Sexwise help line for under 16s 0800 282930 (This is a free phone number)

If you have a problem or query that has anything to do with contraception, sex, sexual health, pregnancy or a sexually transmitted infection, please speak to somebody about it. Speak to someone you trust or use one of the sources of support listed above.
Appendix E: Chi Squared Tests of independence for intervention study
## Case Processing Summary

<table>
<thead>
<tr>
<th>Cases</th>
<th>Valid</th>
<th>Missing</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>N</td>
<td>Percent</td>
<td>N</td>
<td>Percent</td>
</tr>
<tr>
<td>--------------------------------------------</td>
<td>-------</td>
<td>---------</td>
<td>-------</td>
</tr>
<tr>
<td>Completed * Depression</td>
<td>81</td>
<td>0</td>
<td>81</td>
</tr>
<tr>
<td>Completed * Anxiety</td>
<td>81</td>
<td>0</td>
<td>81</td>
</tr>
<tr>
<td>Completed * Stress</td>
<td>81</td>
<td>0</td>
<td>81</td>
</tr>
<tr>
<td>Completed * DASS_Total</td>
<td>81</td>
<td>0</td>
<td>81</td>
</tr>
<tr>
<td>Completed * How old are you?</td>
<td>81</td>
<td>0</td>
<td>81</td>
</tr>
<tr>
<td>Completed * How would you describe your ethnic origin?</td>
<td>81</td>
<td>0</td>
<td>81</td>
</tr>
<tr>
<td>Completed * Please pick the highest level of education you have completed, or the education level you are currently studying for</td>
<td>81</td>
<td>0</td>
<td>81</td>
</tr>
<tr>
<td>Completed * How often have you taken alcohol of drugs to the point of intoxication in the past three months?</td>
<td>79</td>
<td>2</td>
<td>81</td>
</tr>
<tr>
<td>Completed * How many different men have you had anal sex with in the past 3 months?</td>
<td>80</td>
<td>1</td>
<td>81</td>
</tr>
<tr>
<td>Completed * What is your HIV status?</td>
<td>81</td>
<td>0</td>
<td>81</td>
</tr>
</tbody>
</table>
### Chi-Square Tests

<table>
<thead>
<tr>
<th></th>
<th>Value</th>
<th>df</th>
<th>Asymp. Sig. (2-sided)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pearson Chi-Square</td>
<td>15.439³</td>
<td>10</td>
<td>.003</td>
</tr>
<tr>
<td>Likelihood Ratio</td>
<td>18.998</td>
<td>10</td>
<td>.004</td>
</tr>
<tr>
<td>Linear-by-Linear Association</td>
<td>.001</td>
<td>1</td>
<td>.975</td>
</tr>
<tr>
<td>NA of Valid Cases</td>
<td>81</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*a. 31 cells (91.2%) have expected counts less than 5. The minimum expected count is 33.*

### Chi-Square Tests

<table>
<thead>
<tr>
<th></th>
<th>Value</th>
<th>df</th>
<th>Asymp. Sig. (2-sided)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pearson Chi-Square</td>
<td>16.475³</td>
<td>14</td>
<td>.205</td>
</tr>
<tr>
<td>Likelihood Ratio</td>
<td>19.659</td>
<td>14</td>
<td>.141</td>
</tr>
<tr>
<td>Linear-by-Linear Association</td>
<td>529</td>
<td>1</td>
<td>.467</td>
</tr>
<tr>
<td>NA of Valid Cases</td>
<td>81</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*a. 24 cells (80.0%) have expected counts less than 5. The minimum expected count is 33.*

### Chi-Square Tests

<table>
<thead>
<tr>
<th></th>
<th>Value</th>
<th>df</th>
<th>Asymp. Sig. (2-sided)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pearson Chi-Square</td>
<td>15.519³</td>
<td>15</td>
<td>.487</td>
</tr>
<tr>
<td>Likelihood Ratio</td>
<td>19.049</td>
<td>15</td>
<td>.266</td>
</tr>
<tr>
<td>Linear-by-Linear Association</td>
<td>1.181</td>
<td>1</td>
<td>.277</td>
</tr>
<tr>
<td>NA of Valid Cases</td>
<td>81</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*a. 32 cells (94.1%) have expected counts less than 5. The minimum expected count is 33.*
### Chi-Square Tests

<table>
<thead>
<tr>
<th></th>
<th>Value</th>
<th>df</th>
<th>Asymp. Sig (2-sided)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pearson Chi-Square</td>
<td>33.975*</td>
<td>33</td>
<td>.420</td>
</tr>
<tr>
<td>Likelihood Ratio</td>
<td>43.706</td>
<td>33</td>
<td>.101</td>
</tr>
<tr>
<td>Linear-by-Linear Association</td>
<td>.337</td>
<td>1</td>
<td>.561</td>
</tr>
<tr>
<td>N of Valid Cases</td>
<td>81</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

a. 88 cells (100.0%) have expected counts less than 5. The minimum expected count is .33.

---

### Chi-Square Tests

<table>
<thead>
<tr>
<th></th>
<th>Value</th>
<th>df</th>
<th>Asymp. Sig (2-sided)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pearson Chi-Square</td>
<td>36.600*</td>
<td>30</td>
<td>.189</td>
</tr>
<tr>
<td>Likelihood Ratio</td>
<td>45.605</td>
<td>30</td>
<td>.034</td>
</tr>
<tr>
<td>Linear-by-Linear Association</td>
<td>3.767</td>
<td>1</td>
<td>.052</td>
</tr>
<tr>
<td>N of Valid Cases</td>
<td>81</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

a. 81 cells (98.4%) have expected counts less than 5. The minimum expected count is .33.
### Crosstab

#### Count

<table>
<thead>
<tr>
<th></th>
<th>How would you describe your ethnic origin?</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Completed</td>
<td></td>
<td>29</td>
<td>8</td>
</tr>
<tr>
<td>Completed</td>
<td></td>
<td>18</td>
<td>3</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>47</td>
<td>11</td>
</tr>
</tbody>
</table>

#### Chi-Square Tests

<table>
<thead>
<tr>
<th></th>
<th>Value</th>
<th>df</th>
<th>Asymp. Sig. (2-sided)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pearson Chi-Square</td>
<td>1.247*</td>
<td>2</td>
<td>.536</td>
</tr>
<tr>
<td>Likelihood Ratio</td>
<td>1.265</td>
<td>2</td>
<td>.531</td>
</tr>
<tr>
<td>Linear-by-Linear</td>
<td>1.131</td>
<td>1</td>
<td>.288</td>
</tr>
<tr>
<td>Association N of Valid Cases</td>
<td>81</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

a. 1 cells (16.7%) have expected count less than 5. The minimum expected count is 3.67.

### Crosstab

#### Count

<table>
<thead>
<tr>
<th>Please pick the highest level of education you have completed, or the education level you are currently studying for</th>
<th>Secondary school</th>
<th>Post-secondary non-tertiary education (e.g. TAFE)</th>
<th>Bachelor degree</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Completed</td>
<td>8</td>
<td>3</td>
<td>43</td>
<td>54</td>
</tr>
<tr>
<td>Completed</td>
<td>3</td>
<td>2</td>
<td>22</td>
<td>27</td>
</tr>
<tr>
<td>Total</td>
<td>11</td>
<td>5</td>
<td>65</td>
<td>81</td>
</tr>
</tbody>
</table>

#### Chi-Square Tests

<table>
<thead>
<tr>
<th></th>
<th>Value</th>
<th>df</th>
<th>Asymp. Sig. (2-sided)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pearson Chi-Square</td>
<td>.290*</td>
<td>2</td>
<td>.365</td>
</tr>
<tr>
<td>Likelihood Ratio</td>
<td>2.93</td>
<td>2</td>
<td>.364</td>
</tr>
<tr>
<td>Linear-by-Linear</td>
<td>1.11</td>
<td>1</td>
<td>.739</td>
</tr>
<tr>
<td>Association N of Valid Cases</td>
<td>81</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

a. 3 cells (50.0%) have expected count less than 5. The minimum expected count is 1.67.
### Count

| Count     | 0  | 1  | 2  | 3  | 4  | 5  | 6  | 7  | 8  | 9  | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | 32 | 33 | 34 | 35 | 36 | 37 | 38 | 39 | 40 | Total |
|-----------|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|-----|
| Completed | 16 | 14 | 17 | 4  | 3  | 1  | 1  | 1  | 0  | 1  | 0  | 1  | 1  | 1  | 0  | 1  | 1  | 1  | 1  | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 6.00      | 9  | 8  | 9  | 2  | 2  | 2  | 4  | 0  | 1  | 0  | 1  | 0  | 0  | 0  | 1  | 0  | 0  | 0  | 2  | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Total     | 25 | 22 | 33 | 10 | 5  | 3  | 4  | 2  | 1  | 2  | 2  | 2  | 2  | 2  | 1  | 1  | 1  | 1  | 1  | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

### Chi-Square Tests

<table>
<thead>
<tr>
<th>Value</th>
<th>df</th>
<th>Asymp. Sig. (2-sided)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pearson Chi-Square</td>
<td>14.956a</td>
<td>16</td>
</tr>
<tr>
<td>Likelihood Ratio</td>
<td>19.984</td>
<td>16</td>
</tr>
<tr>
<td>Linear-by-Linear Association</td>
<td>369</td>
<td>1</td>
</tr>
<tr>
<td>N of Valid Cases</td>
<td>79</td>
<td></td>
</tr>
</tbody>
</table>

a. 31 cells (91.2%) have expected counts less than 5. The minimum expected count is 3.4.

### Count

| Count     | 0  | 1  | 2  | 3  | 4  | 5  | 6  | 7  | 8  | 9  | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | 32 | 33 | 34 | 35 | 36 | 37 | 38 | 39 | 40 | Total |
|-----------|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|-----|
| Completed | 9  | 17 | 14 | 4  | 3  | 1  | 1  | 1  | 0  | 1  | 0  | 1  | 1  | 1  | 0  | 1  | 1  | 1  | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 6.00      | 1  | 12 | 3  | 4  | 1  | 1  | 2  | 1  | 1  | 0  | 1  | 0  | 0  | 0  | 1  | 0  | 0  | 0  | 2  | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Total     | 10 | 29 | 17 | 8  | 4  | 2  | 3  | 2  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

### Chi-Square Tests

<table>
<thead>
<tr>
<th>Value</th>
<th>df</th>
<th>Asymp. Sig. (2-sided)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pearson Chi-Square</td>
<td>13.711a</td>
<td>12</td>
</tr>
<tr>
<td>Likelihood Ratio</td>
<td>15.663</td>
<td>12</td>
</tr>
<tr>
<td>Linear-by-Linear Association</td>
<td>010</td>
<td>1</td>
</tr>
<tr>
<td>N of Valid Cases</td>
<td>80</td>
<td></td>
</tr>
</tbody>
</table>

a. 20 cells (76.9%) have expected counts less than 5. The minimum expected count is 3.4.
### Crosstab

<table>
<thead>
<tr>
<th></th>
<th>HIV Positive</th>
<th>HIV-negative</th>
<th>I don't know my HIV status</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Completed</td>
<td>0.00</td>
<td>4</td>
<td>39</td>
<td>54</td>
</tr>
<tr>
<td></td>
<td>1.00</td>
<td>1</td>
<td>26</td>
<td>27</td>
</tr>
<tr>
<td>Total</td>
<td>5</td>
<td>65</td>
<td>11</td>
<td>81</td>
</tr>
</tbody>
</table>

### Chi-Square Tests

<table>
<thead>
<tr>
<th>Test</th>
<th>Value</th>
<th>df</th>
<th>Asymp. Sig. (2-sided)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pearson Chi-Square</td>
<td>7.200</td>
<td>2</td>
<td>.027</td>
</tr>
<tr>
<td>Likelihood Ratio</td>
<td>10.620</td>
<td>2</td>
<td>.005</td>
</tr>
<tr>
<td>Linear-by-Linear Association</td>
<td>2.571</td>
<td>1</td>
<td>.109</td>
</tr>
</tbody>
</table>

a. 3 cells (50.0%) have expected count less than 5. The minimum expected count is 1.67.

### Case Processing Summary

<table>
<thead>
<tr>
<th></th>
<th>Cases</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Valid</td>
<td>Missing</td>
<td>Total</td>
</tr>
<tr>
<td></td>
<td>N</td>
<td>Percent</td>
<td>N</td>
</tr>
<tr>
<td>Completed * What is your HIV status?</td>
<td>81</td>
<td>100.0%</td>
<td>0</td>
</tr>
</tbody>
</table>
**Completed *What is your HIV status? Crosstabulation**

<table>
<thead>
<tr>
<th></th>
<th>HIV Positive</th>
<th>HIV negative</th>
<th>I don't know my HIV status</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Completed</strong> .00</td>
<td>4</td>
<td>39</td>
<td>11</td>
<td>54</td>
</tr>
<tr>
<td>% within What is your HIV status?</td>
<td>80.0%</td>
<td>60.0%</td>
<td>100.0%</td>
<td>66.7%</td>
</tr>
<tr>
<td><strong>1.00</strong></td>
<td>1</td>
<td>26</td>
<td>0</td>
<td>27</td>
</tr>
<tr>
<td>% within What is your HIV status?</td>
<td>20.0%</td>
<td>40.0%</td>
<td>0.0%</td>
<td>33.3%</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>5</td>
<td>65</td>
<td>11</td>
<td>81</td>
</tr>
<tr>
<td>% within What is your HIV status?</td>
<td>100.0%</td>
<td>100.0%</td>
<td>100.0%</td>
<td>100.0%</td>
</tr>
</tbody>
</table>

**Chi-Square Tests**

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<tr>
<td>Linear-by-Linear</td>
<td>2.571</td>
<td>1</td>
<td>.109</td>
</tr>
<tr>
<td>Association</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Valid Cases</td>
<td>81</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

a. 3 cells (50.0%) have expected count less than 5. The minimum expected count is 1.67.