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Declaration for thesis based or partially based on conjointly published or unpublished work

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This thesis includes three unpublished publications. The core theme of the thesis is HIV prevention in men who have sex with men. The ideas, development and writing up of all the papers in the thesis were the principal responsibility of myself, the candidate, working within the School of Psychology and Psychiatry under the supervision of Dr Margaret Hay.

In the case of Chapters five, six and seven my contribution to the work involved the following:

Thesis chapter	Publication title	Publication status*	Nature and extent of candidate's contribution
5	High Levels of Psychological Distress and Suicidal Ideation in MSM is Independent of HIV Status	Submitted	70%
6	Risk Factors for High Risk Sexual Behaviour in Men Who Have Sex with Men: the Role of Sensation Seeking, Partner Numbers and Negotiation Skills	Submitted	70%
7	A Brief Motivational Interviewing Intervention Reduces High Sexual Risk Behaviours in MSM – A Randomised Controlled Trial	Submitted	70%

I have / have not (circle that which applies) renumbered sections of submitted or published papers in order to generate a consistent presentation within the thesis.

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Nature of contribution	Extent of contribution (%)
Background literature review, study design, data collection, statistical analysis and write-up.	70%

The following co-authors contributed to the work. Co-authors who are students at Monash University must also indicate the extent of their contribution in percentage terms:

Name	Nature of contribution	Extent of contribution (%) for student co-authors only
A/Prof Anne Mijch	Theoretical input into the study and revision of papers for submission.	10%
Dr Margaret Hay	Supervision of student, guidance and input into the design and statistical analysis of the study. Revision of drafts for submission.	20%

Candidate's Signature

	Date
--	-------------

Declaration by co-authors

The undersigned hereby certify that:

- (1) the above declaration correctly reflects the nature and extent of the candidate's contribution to this work, and the nature of the contribution of each of the co-authors.
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**SEXUAL RISK TAKING BEHAVIOUR IN MEN WHO HAVE SEX WITH MEN:
PSYCHOLOGICAL HEALTH, RELATIONSHIPS WITH RISK AND A
MOTIVATIONAL INTERVIEWING INTERVENTION.**

Submitted by

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BBSc (Hons), MPsych (Health)

A thesis submitted in total fulfilment
of the requirements for the degree of
Doctor of Philosophy

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Abstract

Background. Despite widespread health promotion campaigns, men who have sex with men (MSM) continue to be disproportionately infected with the human immunodeficiency virus (HIV) and other sexually transmitted infections (STIs) in Australia. Recent increases suggest MSM are involved in sexual risk behaviour that is placing them and other men at risk of HIV/STI transmission. There is some evidence that mental health, substance use and psychological variables are related to sexual risk taking. The aim of phase one of this study was to describe the psychological well-being in MSM accessing a sexual health and infectious diseases clinic and to examine predictors of sexual risk taking behaviours. The aim of phase two was to evaluate the effectiveness of a brief Motivational Interviewing (MI) intervention in reducing unprotected anal intercourse and number of sexual partners in MSM with sexual risk behaviours.

Methods. A convenience sample of 250 MSM attending for routine care (HIV positive $n = 52$, HIV negative $n = 198$) were recruited from a large metropolitan sexual health and infectious diseases (ID) clinic. Participants completed self-report questionnaires including sociodemographic questions, substance use, impulsivity, sexual sensation seeking scale and the Personality Assessment Screener (PAS). Those identified as having high sexual risk behaviours from these assessments and who agreed to participate were randomised to receive a two-session MI intervention ($n = 20$) or to a standard care control group ($n = 21$). The MI intervention incorporated a 30-45 minute face-to-face session plus 15 minute telephone booster session. The self-reported frequency of unprotected anal intercourse and number of sexual partners was determined at one and four-months follow-up.

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Results. Approximately one-third ($n = 83$) of the total sample scored in the clinically significant range on the PAS total score. The correlation between Negative Affect/Mood (27% clinically significant) and Suicidal Thinking (29% clinically significant) domains was highest with overall Psychological Distress ($r = .53, p < 0.00$). Multivariate analysis revealed that high sexual risk behaviour was independently positively associated with the number of sexual partners over the previous three months and sexual sensation seeking scores. A negative association was found between high sexual risk behaviour and Negative Affect (mood), Negotiation Skills and daily alcohol intake. The MI intervention group showed significant reductions in unprotected anal intercourse and number of sexual partners over the study period. The proportion of men with UAI was not significantly different between groups at one month post-test ($p = .188$). However, the MI intervention group reported significantly greater reductions in unprotected anal intercourse at four-months post-test ($p = .041$). The MI intervention group also reported significantly greater reductions in sexual partners at one- and four- months post-test relative to the control group.

Conclusions. A subgroup of MSM attending primary health services display clinically significant psychological distress that warrants attention. The use of psychological screening in addition to sexual health assessment of MSM attending sexual health and ID clinics may provide valuable information for improving the well-being of these men. MI shows promise in reducing sexual risk behaviours (unprotected anal intercourse and number of partners) in MSM at high-risk of HIV/STI transmission. MI is a time-limited and brief intervention that is easily delivered in primary care settings during routine care.

Statement of Authorship

This thesis contains no material which has been accepted for the award of any other degree or diploma in any university or other institution. To the best of my knowledge, the thesis contains no material previously published or written by another person, except where due reference is made.

Glossary

MSM: Men who have sex with men

UAI: Unprotected anal intercourse

HIV: Human immunodeficiency virus

AIDS: Acquired immunodeficiency syndrome

STI: Sexually transmitted infection

MI: Motivational interviewing

ID: Infectious diseases

SSSS: Sexual sensation seeking scale

PAS: Personality assessment screener

CHAPTER ONE: PROBLEM STATEMENT AND THESIS OVERVIEW

This chapter provides an outline of the rationale for the study, the study aims and a brief overview of the thesis.

1.0 Introduction and Rationale for the Studies

Men who have sex with men (MSM) represent the highest risk group for transmission of human immunodeficiency virus (HIV) in Australia. Furthermore, there is a current increase in the diagnosis of HIV and other sexually transmissible infections (STI) in this group in Victoria, Australia, despite widespread and targeted health promotion campaigns across several decades. HIV positive MSM have been shown to have elevated levels of mental health problems, including mood disorder, suicidality and substance use. Some evidence exists for increased mental health problems in MSM at risk of HIV, in particular young MSM. In the context of rising HIV infections, surprisingly few studies have assessed the relationship between sexual risk behaviour and the psychological profile of Australian MSM. Personality traits such as sensation seeking, impulsivity and compulsivity have been related to increased risk taking behaviours in some populations at risk of HIV, such as MSM and injecting drug users.

While research into the efficacy of Motivational Interviewing (MI) as a means of reducing sexual risk behaviour shows some promise, the efficacy of this intervention has yet to be determined in high risk MSM accessing sexual health and infectious diseases clinics in Victoria, Australia.

1.1 Statement of Purpose

The purpose of this study was to investigate the mental health in MSM accessing primary health clinics for HIV/STI care, and to explore relationships between psychological factors and sexual risk taking behaviour. A second aim was to determine the efficacy of a brief clinic-based behavioural intervention to reduce risk taking in MSM who are self-reporting high risk behaviour for HIV/STI transmission.

1.2 Research Questions

A cross-sectional design (reported in papers one and two) and a prospective, randomised controlled trial design, with pre- and post-intervention components (reported in paper three) were chosen to capture the relationships between sexual risk behaviour and psychological factors, and the effects of a brief MI intervention on sexual risk taking behaviours over one and four-months following the intervention, respectively. Outcomes were to determine the psychological health of MSM and the relationship between psychological factors and sexual risk behaviour.

A brief description of the research aims addressed in each of the three manuscripts follows.

1.2.1 Paper one: High levels of psychological distress in MSM is independent of HIV status. The three aims of this study were to, (1) describe the mental health of MSM accessing a sexual health and infectious diseases clinic, (2) to explore differences between HIV positive and HIV negative MSM on psychological distress scores, and (3) to examine relationships between psychological symptoms, sociodemographic factors, substance use and HIV status. It was hypothesised that MSM accessing a sexual health and infectious diseases clinic would have elevated levels of psychological distress, including mood disorder and suicidality. Associations between psychological distress scores, substance use, HIV (positive) status and younger age were also predicted.

1.2.2 Paper two: Risk factors for high risk sexual behaviour in MSM: The role of sensation seeking, partner numbers and negotiation skills. The aim of this study was to determine the psychological factors that are independently associated with high risk sexual behaviour for HIV/STI transmission, beyond the behavioural risk factors of substance use and multiple sexual partners. Specifically, the influence of personality factors (specifically sensation seeking, impulsivity, compulsivity), psychological constructs (self-efficacy, negotiation skills and mood) and stage of behaviour change that may influence sexual risk behaviours were investigated. It was hypothesised that increased sensation seeking, impulsivity, compulsivity and negative mood would be positively associated with increased sexual risk behaviours, as well as increased substance use and sexual partners.

1.2.3 Paper three: A brief motivational interviewing intervention reduces high risk sexual behaviour in MSM: A randomised controlled trial. The aim of this study was to assess the efficacy of a brief MI intervention to reduce sexual risk behaviour for HIV/STI transmission in MSM who self-report high sexual risk behaviour. An increased reduction in sexual risk behaviours in MSM receiving MI was expected relative to MSM who did not receive MI (i.e., standard care control group). Specific research questions were, 1) Will the MI group report an increased reduction in sexual risk behaviour following MI at one- and four- months post-test beyond the standard care control group? and 2) Will the MI group have greater reductions in the number of sexual partners at both time points relative to the standard care control group?

1.3 Thesis Overview

A brief outline of the history of HIV epidemiology is contained in **Chapter Two**. Research on the factors associated with sexual risk taking behaviours were also reviewed, and these include mental health status, substance use and psychological constructs such as personality traits and self-efficacy. Behaviour change interventions in HIV programs and the efficacy of MI were reviewed in **Chapter Three**. The design of the study, sampling methods, the test measures used, and the experimental and statistical procedures undertaken were outlined in **Chapter Four**. Results for the three manuscripts submitted for publication are presented in **Chapters Five, Six and Seven**. **Chapter Eight** provides an integrated discussion of the overall findings and future research and the implications of the results for health care are offered.

CHAPTER TWO: A REVIEW OF THE LITERATURE ON THE RELATIONSHIPS BETWEEN MENTAL HEALTH STATUS AND SEXUAL RISK BEHAVIOURS

Despite the proliferation of safe sex education, the incidence of HIV and STIs has increased in the past decade relative to initial levels in Australia (Department of Human Services (DHS), 2010). Epidemiological reports confirm that new diagnoses of HIV have increased over the past 10 years, from 132 diagnosed in 1999 to 262 in 2009. The vast majority of these infections occurred in MSM (76% in 2009) (DHS, 2010). Notifications of STIs in Victorian MSM have also increased dramatically in the past several years with 90% of the syphilis notifications during 2007 identified in MSM compared with only 12.5% in 2000 (Guy, 2007). Increasing notifications of HIV and STIs in MSM suggest that at least a proportion of this group is involved in sexual risk behaviour that is placing them and other MSM at risk of HIV/STI transmission. This increased incidence of HIV/STIs is also consistent with the behaviour surveys in this group, which reported that 29.4% of MSM surveyed had unprotected anal intercourse (UAI) with casual partners in the preceding six months, a sexual practice well recognised as the riskiest sexual behaviour for HIV/STI transmission (Frankland, et al., 2008). It is also important to highlight that infection with an STI increases the risk of both contracting and transmitting HIV. Thus, there is an urgent need to identify strategies that can be delivered in Australian health care settings that specifically target risk behaviours in MSM. To be effective, such strategies would need to address known risk factors for HIV transmission in this group.

2.1 HIV Disease and Epidemiology

Acquired immunodeficiency syndrome (AIDS), a chronic life-threatening disease, is caused by infection with HIV. HIV is a retrovirus that primarily infects the immune system via components such as CD4 T cells, macrophages and dendritic cells, and compromises the proper functioning of the system (Hoy, Lewin, Post, & Street, 2009). When HIV kills these cells so that there are fewer than 200 CD4 T cells, remaining cellular immunity is lost, leading to the syndrome known as AIDS. Acute HIV infection progresses over time to clinical latent HIV infection and then to early symptomatic HIV infection and later to AIDS. The latter disease is identified on the basis of the number of CD4 T cells in the blood and the presence of opportunistic infections. In the absence of antiretroviral therapy, the median time of progression from HIV infection to AIDS is nine to 10 years, and the median survival time after developing AIDS is 9.2 months (Hoy, et al., 2009). Although current treatments for HIV/AIDS can slow disease progression, there is no known cure. However, the use of highly active antiretroviral therapy (HAART) prolongs both the median time of progression to AIDS and the median survival time (United Nations programme on HIV/AIDS (UNAIDS), 2009).

HIV is transmitted through direct contact of the blood stream or a mucous membrane with a bodily fluid containing HIV. These fluids include blood, semen, vaginal fluid and breast milk (Hoy, et al., 2009). The most common form of transmission is via unprotected sex (anal, vaginal or oral); blood transfusion with infected blood; use of contaminated needles; and mother to baby transmission (during pregnancy, childbirth

or breastfeeding). Co-infection with a STI increases the risk of HIV transmission due to disruption of the normal epithelial barrier by genital ulceration and/or micro-ulceration; and by accumulation of pools of HIV-susceptible or HIV-infected cells (lymphocytes and macrophages) in semen and vaginal secretions (UNAIDS, 2009). Epidemiological studies have suggested that there is an approximately four times greater risk of becoming infected with HIV in the presence of a genital ulcer, such as those caused by syphilis (Hoy, et al., 2009). Furthermore, people who are already infected with HIV can still be re-infected by other, more treatment resistant strains of HIV (UNAIDS, 2009).

2.1.1 HIV/AIDS globally. HIV/AIDS is a pandemic, with an estimated 33.4 million people now living with this disease worldwide. As of November 2009, the Joint United Nations Programme on HIV/AIDS (UNAIDS) and the World Health Organization (WHO) estimated that AIDS had killed more than 30 million people since it was first recognised in 1981, making it one of the most destructive epidemics in recorded history (UNAIDS, 2009). In 2008 alone, AIDS claimed an estimated two million lives, including more than 280,000 children. A third of these deaths have occurred in sub-Saharan Africa where routine access to antiretroviral medication is not widely available.

HIV/AIDS is a complex disease from the perspective of health, gender, economic inequalities and human rights. These issues, however, will not be reviewed here, as they are not the focus of this research project. In many regions of the world, HIV infections are heavily concentrated among young people aged 15-24 years. However, the situation in Australia is quite different with newly acquired HIV infections occurring most

commonly in MSM aged in their mid thirties (DHS, 2010), and prevalence rates are relatively lower than most other countries.

2.1.2 HIV/AIDS in Australia. In Australia, HIV/AIDS has been significantly contained by a strong and coordinated community and government response. As at December 2009, 29,395 people have been diagnosed with HIV infection and 10,446 people with AIDS since records began in the early 1980s (McDonald, 2010). A cumulative total of 6,776 deaths had been attributed to HIV/AIDS. The annual number of AIDS diagnoses in Australia declined from 672 in 1996 to 209 in 2001, and has remained relatively stable over the past four years at around 240 diagnoses (McDonald, 2010). The decline in the number of AIDS diagnoses in 1996 to 2001 can be attributed to the fall in HIV incidence that took place in the mid 1980s and to the introduction of HAART in 1996 (DHS, 2010; McDonald, 2010).

The annual number of new HIV notifications in Australia rose from 658 cases in 2000 to 1050 in 2009, an increase of 59% (McDonald, 2010). Differences between the States and Territories exist in the numbers of newly diagnosed HIV infections. For example, in the period from 2005 to 2009, New South Wales recorded a stable population rate of new HIV infections of around 5.7 per 100,000 population, while the Queensland rates of newly diagnosed infections reached their highest recorded level (4.7 per 100 000 population). The diagnosis of HIV in Victoria peaked in 2006 at 5.5 (up from 3.9 in the year 2000) and since then has declined slightly to 5.2 per 100 000 in 2009. South Australia and Western Australia have also shown similar patterns, increasing from 1.5 and 2.5 in 2000 to 4.0 and 3.7 in 2006, declining to 3.4 and 3.5 in 2009 respectively. In

Australian, in cases of newly acquired HIV infection, male to male sex was reported in 88%; injecting drug use among women and heterosexual men in less than 1%; and through heterosexual contact in only 8% of cases (McDonald, 2010).

UAI remains the most important behavioural factor in HIV transmission in Australia. Of MSM surveyed in Australian communities, 40% to 50% reported engaging in UAI with primary or casual partners in the preceding year (Frankland, et al., 2008). Rates of HIV testing remain high among MSM, with more than 80% reporting having been tested for HIV at some point (Lister, Smith, Tabrizi, Garland, & Fairley, 2006). This indicates that the majority of MSM are engaged with health services and are, for the most part, frequently tested. From a health promotion perspective, it is also reasonable to surmise that MSM are receiving health promotion messages to engage in safe sex and HIV/STI testing. In spite of this, a substantial number (29.4%) (Frankland, et al., 2008) continue to participate in high risk sexual behaviours.

STIs, in particular infectious syphilis, have been increasing rapidly in Victoria with at least one person diagnosed every day. This is more than double the rate recorded in 2006 and more than 30 times the rate in 2000. The majority of these diagnoses are in MSM (DHS, 2010; Guy, 2007). Although transmission rates in Australia are low in comparison to many other countries, individuals, specifically MSM, continue to be infected with HIV and other STIs. For example, in 2003, Lister et al. (2006) identified that, among 127 MSM with anorectal gonorrhoea (NG) or Chlamydia, 17% were co-infected with HIV and 47% of those later re-tested were re-infected with another STI (Lister, et al., 2006). Between 2001 and 2005, 40% ($n = 480$) of individuals attending for HIV care at a large inner-city teaching hospital in Melbourne were screened for STIs. Of

these, 45 (9%) were infected with NG and 42 (5.8%) with Chlamydia. A sub-group ($n = 72$) were re-tested at six to 12 monthly intervals and the estimated incidence of NG and Chlamydia over this period was 14.2 and 9.6 per 100 person months of follow-up respectively (Mijch, 2009). These findings have identified a group of MSM who, despite experiencing multiple negative sequelae, and engagement with health services, appear to be maintaining high risk sexual practices. Increased understanding of the antecedents of sexual risk taking behaviours are therefore needed to inform the continued development of targeted interventions for high-risk MSM.

2.2 Predictors of Sexual Risk Behaviours

Investigations examining the correlates of HIV transmission and sexual risk have led to a large body of evidence on the topic. Good evidence exists for the role of behavioural variables when predicting HIV/STI transmission, for example increasing number of sexual partners and sexual acts (Koblin, 2006); biological variables (e.g., increasing HIV viral load, decreasing CD4 counts, co-occurring STIs) (CDC, 2003; Hoy, et al., 2009); and sociodemographic variables (e.g., age, community involvement, ethnicity) (Mao, et al., 2006). Substance use is commonly measured in relation to sexual risk-taking behaviours, with fewer studies investigating the role of mental health status and psychological constructs on sexual risk behaviours (e.g., mood disorder and personality traits) (Kalichman, Cain, Zweben, & Swain, 2003; Rogers, et al., 2003). The large number of variables shown to be associated with high risk sexual behaviour indicates the complexity of these behaviours (Dudley et al., 2004). This complexity is

often overlooked by research that focuses solely on the behavioural variables associated with risk taking (i.e., frequency of substance use, frequency of sexual acts and sexual partners, and frequency of HIV/STI testing), as there is common overlap between these variables. An identifiable gap in the research literature is the exploration of the motivational and psychological factors that influence these risky behaviours. These include mood, personality traits, self-efficacy, negotiation ability and motivation to change. A review of the association between sexual risk behaviour and substance use and an overview of the aforementioned variables will be undertaken in the following section.

2.2.1 Substance use. There is substantial evidence from population surveys amongst MSM that alcohol use is highly prevalent in this group (78% to 89% self-reported consumption) (Cochran, Keenan, Schober, & Mays, 2000; Hull, Prestgae, & Rawstorne, 2005; Hull, Van De Ven, & Prestgae, 2002). A consistent finding is that MSM who consumed alcohol more frequently before or during sex reported an increased incidence of high risk behaviour, specifically more UAI with casual partners (Clutterbuck, Gorman, McMillan, Lewis, & Macintyre, 2001; Koblin, 2006; McKirnan & Peterson, 1989; Stueve, O'Donnell, Duran, San Doval, & Geier, 2002). Similarly, men who used illicit drugs more frequently before or during sex were also more likely to engage in UAI with casual partners (Clutterbuck, et al., 2001; Koblin, 2006; Stueve, et al., 2002). Furthermore, those with co-morbid psychiatric and substance use disorders more frequently reported multiple sex partners (Newville & Haller, 2010). Stueve et al. (2002), studied the sexual behaviour in 3,000 young urban MSM in the U.S.A. and found that nearly one third of their sample were intoxicated on alcohol or illicit drugs during

their most recent sexual encounter with a casual partner. Men who had consumed illicit drugs were over 60% more likely to have engaged in UAI. Furthermore, substance use was associated with other risk factors, including having multiple sex partners and trading sex for drugs or money.

In Victoria, an important finding of an HIV case control study (Read, Hocking, Sinnott, & Hellard, 2007) was that cases (i.e., individuals recently diagnosed HIV positive) were more likely than controls (i.e., HIV uninfected individuals) to binge drink (i.e., consume more than six drinks at a time) at least weekly. In this study, the association between alcohol use and HIV seropositive status increased with increasing levels of alcohol consumption. Similarly, an association between the use of amphetamine derivatives and testing HIV seropositive was also evident. In this study, participants were asked to identify the sexual episode they thought put them at greatest risk of HIV infection. These men were more likely to have used alcohol or amphetamine derivatives during this nominated “high risk” sexual episode than men in the control group. Adding further evidence to this was the 2-year prospective cohort study investigating depression and neurocognitive performance in individuals with HIV/AIDS in which high rates of health risk behaviours were found (Gibbie, et al., 2006). In this study, almost half of the participants reported current illicit drug use and frequent alcohol use. MSM who reported that they did not always using a condom with casual partners were more likely to have consumed drugs and/or alcohol before or during the event (unpublished data Gibbie et al., 2006). Dudley et al. (2004) suggested that findings such as these are consistent with the assumption that a specific risk behaviour is more likely to occur when it is part of a constellation of problem behaviours such as sexual risk and substance use.

2.2.2 Mood. Depression is common in individuals with a variety of medical illnesses, with estimated prevalence rates varying from 20% to 50% (Cavanaugh, 1991). Studies of outpatients with HIV/AIDS have demonstrated that up to 50% have significant depressive symptoms (Judd & Mijch, 1996; Judd, Mijch, McCausland, & Cockram, 1997; Mao, et al., 2009; Williams, Rabkin, Remien, Gorman, & Ehrhardt, 1991). More recently, however, treatment with HAART has been presumed to decrease depression in treated populations (Judd, et al., 2000). Furthermore, depression has been shown to have a detrimental impact on those with chronic medical illness, including HIV/AIDS. These effects include increased functional disability; increased symptom reporting and poorer levels of self care and illness management (Judd, et al., 1997); increased health service utilisation (Johnson, Williamsons, Rabkin, Goetz, & Remien, 1995); and increased medical morbidity and mortality in depressed chronically medically ill patients (Katon & Sullivan, 1990; Saravay, 1995). Furthermore, in numerous studies it has been revealed that up to 50% of people with HIV/AIDS are clinically depressed (Blalock, McDaniel, & Farber, 2002; Chandra, Ravi, Desai, & Subbakrishna, 1998; Cohen, Hoffman, Cromwell, & Schmeidler, 2002; Hirabayashi, Fukunishi, Kojima, & Kiso, 2002; Johnson, et al., 1995; Judd, et al., 2000; Judd, et al., 1997). Considering the enormity of the HIV/AIDS pandemic, it is possible that millions of people are experiencing some form of HIV-related depression.

Many investigators have speculated on the links between mental health disorder, most commonly mood disorders, and the transmission of HIV (Ellen, Judd, Mijch, & Cockram, 1999; Parsons, Halkitis, Wolitski, & Gomez, 2003; Rogers, et al., 2003).

However the evidence from these studies is inconsistent. As a result of indifference toward their health and well-being, depressed individuals may be less careful with regard to safe sexual practices and at its most extreme, depressed individuals may deliberately place themselves at risk of HIV infection as a means of suicide (Ellen, et al. 1999).

Certain groups may be particularly at risk for depression and this may compound pre-existing health risks. For example, psychiatric co-morbidity is common in patient groups seeking treatment for substance use. For example, the most common co-occurring diagnoses among opiate addicts are depression, alcoholism and anti-social personality disorder (Nace, Davis, & Gaspari, 1991; Rounsaville, Weissman, Kleber, & Wilber, 1982). In particular, studies (Kidorf, et al., 2004; Ross, et al., 2005) have consistently noted both a high rate of current depression among opiate addicts presenting for treatment and also a high lifetime rate of depression in this population. The combination of substance use problems and mental health problems such as depression may lead to increased HIV risk behaviours, including unprotected sex and unsafe drug use practices (Ross, et al., 2005). For example, Mao et al. (2009) assessed major depression in HIV positive and negative MSM attending primary care services in Sydney and Adelaide. These authors identified major depression in 31.8% of HIV positive and 20.1% of HIV negative MSM. Depression was shown to be independently associated with younger age, lower income, recent life stress, passive coping strategies, less social support, sexual problems and less gay community involvement. HIV status was not independently associated with major depression (Mao, et al., 2009). Hypomania, although less frequent, is a well recognised risk factor for disinhibited behaviour, which in MSM may be associated with increased risk of HIV infection (Ellen, et al., 1999).

In a review of empirical studies on the social, psychological, interpersonal and medical findings related to sexual risk behaviour in people living with HIV, 61 published articles contributing tests of association (or lack of association) for 126 variables under these domains were reviewed (Crepaz & Marks, 2002). Thirty-four of the reviewed papers examined the association between negative affect (depression, anxiety and emotional distress) and sexual risk taking in MSM, substance users and other heterogeneous samples, the results of which did not support an association between negative affect and sexual risk. In contrast to these findings are those reported by Rogers et al. (2003), who assessed a South Australian cohort of MSM attending a community medical practice. These researchers found equal proportions of HIV infected and uninfected MSM had depressive symptoms. In this study it was reported that MSM with dysthymia were almost twice as likely to engage in risky sexual behaviour as were MSM without this diagnosis. Beck, McNally, and Petrack (2003) found MSM who practised unsafe sex were significantly more likely to reach clinical depression on a screening tool compared to those who had not had unsafe sex. There were, however, no differences in anxiety scores in this study. Semple, Patterson, and Grant (2000) identified five psychosocial predictors of UAI in a sample of 212 HIV positive MSM. Predictors of UAI included depression, loneliness and the personality variable impulsivity (Semple, et al., 2000). Parsons et al. (2003) found scores on brief measures of anxiety, depression, hostility, loneliness and suicidality were associated with UAI. When including substance use and other psychosocial variables, symptoms of anxiety and depression differentiated men who engaged in UAI-insertive sexual position from those who had UAI-receptive

sexual position. Anxiety and loneliness also differentiated those whose riskiest behaviour was UAI-receptive from those who were UAI-insertive.

In summary, depression has been shown to be elevated in HIV positive and at-risk populations, such as MSM and injecting drug users. In MSM, mood disorder has been associated with being younger and having less gay community involvement. The relationship between mood and sexual risk behaviour, however, remains unclear. This inconsistent relationship between mood and sexual risk may be due to a number of factors, such as the different measures for assessing mood disorder employed across studies (i.e., screening tools or structured interviews), and the definition and operationalisation of sexual risk behaviours (i.e., vaginal sex, UAI-insertive/receptive, oral sex). Another possible confounding factor is the complex overlap between psychosocial symptoms (i.e., low mood and social support/withdrawal) and risk behaviours. Given the negative effect of mental health problems on health related outcomes and its potential role in sexual risk taking behaviours, it is essential to understand the psychological profile and well-being of this high risk group.

2.2.3 Anti-social and borderline personality disorder. Personality disorders (PD) are diagnosed when personality traits exceed the levels found in the majority of people and when they are sufficiently rigid and maladaptive to cause subjective distress or functional impairment (American Psychiatric Association, 2000). Approximately 10% of adults in the community have a PD (Weissman, 1993). Few studies of the influence of personality on the acquisition of HIV have been reported. However, personality could be expected to contribute to the risk of acquisition of HIV through behavioural mechanisms,

such as unprotected sex (Perkins, Davidson, Leserman, Liao, & Evans, 1993). The most common personality disorders among HIV infected individuals are anti-social and borderline disorders (Golding & Perkins, 1996). Individuals with anti-social PD display a reckless disregard for the safety of self or others and impulsivity or failure to plan ahead (APA, 2000). Those with borderline PD include impulsivity in at least two areas that are potentially self damaging (e.g., sexual activity and substance abuse). The diagnosis of anti-social PD is characterised by chronic, irresponsible, exploitative, and reckless behaviour in the context of poor impulse control and low harm avoidance. It is reasonable to surmise that behavioural characteristics associated with anti-social PD might contribute to greater risk of HIV infection. Borderline PD is characterised by a pervasive pattern of instability and impulsivity in areas that are potentially self-damaging and recurrent suicidal behaviour (APA, 2000). This disorder was found more commonly in HIV positive people than HIV negative people (Jacobsberg, Frances, & Perry, 1995; Perkins, et al., 1993). These authors suggest that the impulsive features identified in PD, particularly borderline and anti-social disorders, contribute to HIV risk taking, and also overlap with associations found between sexual risk behaviour and substance use (e.g., increased substance use and needle sharing due to impulsivity) (Brooner, Greenfield, Schmidt, & Bigelow, 1993).

Jacobsberg and colleagues (1995) assessed the rate of PD among adults at risk of HIV infection. These authors studied 260 people who had volunteered for HIV testing to determine the prevalence of PD and reported that 37% of the participants who subsequently tested HIV positive and 20% of those who tested HIV negative met criteria for a PD. These rates are substantially higher than the prevalence of PD in the general

community, which is reported to be 10% (Jacobsberg, et al., 1995). This finding also suggests that the presence of a PD may increase the risk of HIV infection. An alternative explanation is that individuals with PD may seek testing for HIV more frequently than non-PD individuals (Jacobsberg, et al., 1995).

Perkins and colleagues (1993) supported this finding of high rates of PD among those infected with HIV in the U.S.A. In a study of 85 asymptomatic HIV-positive and 53 HIV negative MSM living outside the high prevalence epicentres of the HIV/AIDS epidemic, they found significantly more individuals with PD diagnoses in the HIV-positive participants (33%) than the HIV negative participants (15%). For the 19 HIV-positive participants with PD diagnoses, 13 were diagnosed with a single PD, and six received more than one diagnosis. For the eight HIV negative participants, five were diagnosed with a single PD, and three received more than one diagnosis. The most common principle diagnosis was borderline PD (five HIV-positive and three HIV-negative participants). Other principle diagnoses included dependent, passive-aggressive and histrionic PD. The results of this study also revealed that individuals with a PD were also more likely to experience significantly higher levels of mood disturbance (dysphoria) than those without a PD. Perkins and colleagues hypothesised that a possible explanation for the high proportion of HIV infected men with PD may be that individuals with this disorder are more likely to engage in high-risk sexual behaviour leading to HIV exposure.

Describing the profile and characterisation of their patients, Hutton and Treisman (1999) reported that 60% of patients attending the authors' AIDS psychiatry service had a personality style characterised by extroversion and emotional instability. They described

these individuals as being preoccupied by and acting upon their feelings. Their feelings were evanescent and changeable; consequently their actions tended to be unpredictable and inconsistent. Hutton and Treisman further asserted that regardless of intellectual ability or knowledge of HIV, unstable extroverts engaged in behaviour associated with extreme risk of HIV infection. Past experience and future consequences were relatively unimportant in the decision making process of the individual who is ruled by viewing the present as paramount. For these individuals, the overarching goal is to achieve immediate pleasure or removal of pain regardless of circumstances. Hutton and Treisman (1999) further described that individuals who are present- oriented, driven by feelings, reward seeking, and emotionally unstable are more likely to engage in behaviour that placed them at risk for HIV infection. These authors also argued that unstable extroverts were less likely to plan ahead and carry condoms and more likely to have unprotected sex than those without these traits. These individuals were more focused on the reward of sex and remarkably inattentive to the STI they may acquire if they did not use a condom. Hutton and Treisman further reported that unstable extroverts were similarly more vulnerable to pleasure seeking behaviours and to alcohol and drug abuse. They were drawn to alcohol and drugs as a quick route to pleasure and more likely to experiment with different kinds of drugs and to use larger quantities. According to Hutton and Treisman unstable extroverts were also more likely to become injecting drug users because the experience is more intense and they were less likely to defer intensity in the interest of safety.

Hutton and Treisman (1999) reported that in their AIDS psychiatry service, the second most common personality type, representative of about 25% of patients attending their clinic, was stable extroverts. They too were present-oriented and pleasure seeking

but their emotions were not as intense or as easily provoked. Interestingly, they were characterised as not being driven to achieve pleasure. In contrast, introverted personalities were less common in patients attending the Hutton and Treisman psychiatric service. The focus of these individuals was reported to be on the future; avoidance of negative consequences; and preference for cognition over feeling, which render them more likely to engage in protective and preventative behaviours. Although this description is derived from the population of one clinic and may not generalise to the wider community, it is one of the few papers in which the relationship between sexual risk behaviour and personality in depth was explored.

In summary, few studies of the influence of PD on the acquisition of HIV have been reported. The research evidence suggests that PD could be expected to contribute to the risk of acquiring of HIV through behavioural mechanisms such as substance use and unprotected sex, as such people are driven by characteristics such as impulsivity and pleasure seeking (Hutton & Treisman, 1999). Furthermore, dysphoric mood and substance use commonly observed in PD may also extend to the relationships identified between sexual risk taking, mood and substance use, as there is shared overlap between these characteristics. It is important to explore the influence of both PD and personality traits on HIV related risk behaviours, as it is unclear whether it is the joint features of anti-social and borderline PD such as impulsiveness and pleasure seeking that may lead to increased sexual risk taking, and not the PD diagnosis *per se*.

2.2.4 Sensation seeking, compulsivity and impulsivity personality traits. In addition to concomitant problem behaviours such as substance use and mental health

disorders, including major depressive episodes and personality disorder, there is some evidence for the salience of psychological constructs such as personality dispositions in understanding sexual risk behaviour. Sensation seeking traits, that is, the propensity for thrill and adventure seeking, boredom susceptibility and disinhibition (Zuckerman, 1994), have been shown to be associated with sexual risk taking in heterosexual (Kalichman, et al., 2003) homosexual, and bisexual men (Kalichman, Heckman, & Kelly, 1996). This individual difference construct is related to expectations that alcohol use enhances sex (Kalichman, et al., 2003). Sexual compulsivity traits, that is the tendency towards sexual preoccupation and obsessions, has been shown to predict number of sexual partners and history of STIs (Benotsch, Kalichman, & Kelly, 1999; Benotsch, Kalichman, & Pinkerton, 2001; Kalichman & Rompa, 1995) and UAI (Halkitis, et al., 2005). For example, in a survey of 2,883 MSM seeking sexual partners via the internet, men who scored higher on a sexual compulsivity measure were more likely to report UAI with their most recent sexual partners (Coleman, et al., 2006). Impulsivity has also been shown to be associated with high risk sexual activity (Semple, et al., 2000).

Cooper, Agocha and Sheldon (2000) suggested that impulsivity, sensation seeking or compulsivity may serve as coping strategies for the regulation of negative affect. This means that an individual may use alcohol, illicit drugs or risky sexual behaviour (i.e., the impulsive/sensation seeking/compulsive behaviours) to lift dysphoric mood states (Cooper, et al., 2000). This conclusion is consistent with the patient profiles cited by Hutton and Treisman (1999). As discussed earlier, the findings regarding the association between negative mood and risky behaviour, however, have been mixed (Parsons, et al.,

2003; Rogers, et al., 2003), indicating the need for further research to firmly establish the link between sensation seeking, compulsivity, impulsivity and sexual risk behaviour.

2.2.5 Other factors associated with sexual risk behaviour. Researchers have examined the relationships between HIV risk behaviours and constructs such as knowledge and attitudes regarding HIV risk, as well as social skills with respect to condom negotiation (Beck, et al., 2003; Cerwonka, Isbell, & Hansen, 2000; Semple, et al., 2000); condom-use self-efficacy (Semple, et al., 2000); and assumptions of sexual partner's HIV status and sero-sorting (Eaton, Kalichman, O'Connell, & Karchner, 2009; Parsons, et al., 2006; Zablotska, et al., 2009). The results of these studies have suggested that risky sex is associated with having less knowledge about HIV/AIDS and modes of transmission, believing that sex with a condom decreases pleasure, and having problems communicating to partners about safer sex (Crepaz & Marks, 2002; Gibbie, et al., 2008; Parsons, et al., 2006). Sexual risk behaviour in steady relationships has been shown to be associated with the belief that an individual's sexual partner desires UAI, and that unprotected sex is a sign of trust (Davidovich, De Wit, & Stroebe, 2004). HIV optimism and the belief that anti-retroviral therapy reduces infectivity, has also been associated with increases in sexual risk behaviour (Stolte, Dukers, Geskus, Coutinho, & De Wit, 2004; Van De Ven, Prestage, Crawford, Grulich, & Kippax, 2000).

Condom-use self-efficacy, that is the self-perceived confidence an individual has in using a condom during a sexual encounter, has been shown to differentiate sexual risk takers from non risk takers (Reid, 2007; Semple, et al., 2000), and to be related to positive outcomes in AIDS prevention media campaigns (Kalichman, et al., 2006).

2.3 Summary

In summary, substantial knowledge on the mental health status of those diagnosed and at-risk of HIV has emerged over the past 15 years. Despite this, the relationship between mental health status and sexual risk taking behaviour remains unclear. However, a number of correlates and predictors of risk-taking has emerged. While substance use has been found to be commonly associated with risk behaviours, the relationship between mood disorder, personality disorder/traits and sexual risk taking is less clear. Certain elements of these disorders, such as dysphoric mood, impulsivity, compulsivity and sensation seeking have been shown to differentiate between those with and without sexual risk behaviours. Furthermore, condom-use self-efficacy and negotiation, and HIV treatment optimism differentiate those with high and low sexual risk behaviour. It is important that the underlying drivers of sexual risk behaviours, beyond behavioural variables such as substance use and multiple partners, are understood. This understanding is vital to the development of appropriate and targeted health care interventions aimed at both improving mental health and reducing sexual risk behaviour in high risk MSM.

CHAPTER THREE: MOTIVATIONAL INTERVIEWING AS A SEXUAL RISK REDUCTION INTERVENTION

This chapter contains a review of the literature on behaviour change interventions for HIV prevention. The Transtheoretical Model of behaviour change is also presented as is a review of the literature on Motivational Interviewing (MI) to determine the potential of MI to reduce sexual risk taking behaviour in high sexual risk taking MSM.

3.0 Behaviour Change Interventions for HIV Prevention

The Centres for Disease Control (CDC) has recommended clinic-based interventions to prevent HIV transmission and also recommend screening for STI, brief behavioural risk reduction interventions and facilitation of partner HIV testing and treatment (CDC, 2003). During the past 10 to 15 years a range of intervention programs aimed at reducing high-risk sexual behaviour, namely UAI, have been trialled with individuals, groups and communities in most countries in which HIV transmission has been identified as a public health problem. Surprisingly, few of these have been systematically evaluated. Furthermore, to date the literature on the efficacy of such interventions is mixed.

Kalichman, Carey and Johnston (1996) conducted a meta-analysis of behavioural intervention studies targeting at-risk sexual behaviour among a range of people including MSM. These authors found that, although behavioural change post-intervention occurred, this change in behaviour diminished across studies as time from intervention to follow-up

increased from one to six months. A more recent meta-analysis of 12 randomised controlled trials or quasi-experimental design studies of behavioural interventions aimed at reducing UAI with MSM was conducted by Johnson, Hedges and Diaz (2003). These studies, undertaken between 1988-1997, spanned individual (two studies out of 12), small group (seven studies out of 12) and community-level (three studies out of 12) interventions of between three hours (small group) and months (community-level). A statistically significant reduction in the number of men engaging in UAI was found, from an average of 31% of men prior to intervention, to 24% at one-month post intervention (23% reduction). It was also noted that intervention programs that utilised community-level approaches appeared marginally more efficacious than those using small group approaches. Those which targeted younger men were marginally more efficacious than those targeting older men, and those which promoted interpersonal skills were marginally more efficacious than those which did not (Johnson, Hedges & Diaz, 2003). Though data from first follow-up were used in the analysis, the authors noted that if data closest to the 12 month post-intervention point had been used instead, results would not have been substantially altered. These findings suggested that short to medium term positive gains could be made for the relatively homogenous group (with a self-selecting bias) who believed their UAI placed them at risk, and who sought help and completed an intervention program, though these gains were modest. Of the remaining 24% of men who sought help but whose behaviour did not change after intervention, it is possible that these represent the more difficult-to-reach clients whose risk-taking is driven by complex reasons, such as poor impulse control.

In a large ($N = 4,295$) randomised controlled trial titled EXPLORE the effect of a behavioural intervention in preventing the acquisition of HIV in MSM in the U.S.A. (Koblin, Chesney, Coates, & EXPLORE Study Team, 2004) was tested. Inclusion criteria for the trial were having tested HIV negative and having had anal intercourse in the previous year. Approximately half of the cohort had had unprotected sex in the previous six months. In the EXPLORE study, participants randomised to the intervention group received 10 one-on-one counselling sessions plus maintenance sessions every three months over the four-year study period. Study results revealed an 18.2% difference in the rate of HIV acquisition in the intervention group. The authors proposed that these results illustrated how behavioural interventions can prevent HIV transmission. Providing such a time-intensive and presumably expensive intervention is not generally feasible in public health funded and resource poor settings. It is therefore important to also test the efficacy of briefer, targeted interventions for high sexual risk taking MSM. In this chapter, one such brief intervention, Motivational Interviewing, will be described and evaluated.

Before reviewing the literature on MI, understanding the behaviour change process itself will be examined through the Transtheoretical Model of behaviour change.

3.1 Transtheoretical Model of Behaviour Change

It is now widely accepted within health psychology literature that, when helping individuals to make enduring changes in health-related behaviours, educational or psychoeducational interventions used alone are not effective (Kalichman, Stein, et al., 2002). On the basis of experience with client groups whose health-related difficulties

have often appeared impermeable to implementation-focused interventions such as clients with alcohol or tobacco addictions, Prochaska and DiClemente (1986) proposed readiness for change as a vital mediator of change outcome. Their Transtheoretical Model of behaviour change (Stages of Change) assumes that change is a dynamic process involving both losses and gains that generate ambivalence about change within the individual. This ambivalence can impede motivation to change and hence, reduce or negate the effectiveness of implementation-focused intervention such as skills training. The dynamic process by which individuals grapple with ambivalence is described in the stages of Precontemplation, Contemplation, Readiness for Action, Action and Maintenance. Relapse is also considered an important stage in the change process. Lack of motivation can be viewed as a perceptual problem, wherein the individual sees no (or insufficient) need to change, despite the fact that others (e.g., health professionals/family) do perceive a problem and a need for change. Miller and Rollnick (1991) conceptualised motivation to change, or maintain behaviour change, as a state of readiness for change, rather than a personality trait. A lack of motivation (or resistance to change) then, is not seen as inherent within an individual, but rather something that is open to change. Thus, the Stages of Change model provides a useful framework for classifying MSM's current action and their future intentions for behaviour change. Interventions congruent with this model, such as MI, offer the potential for supporting readiness for change in MSM with sexual risk behaviours.

3.1.1 Motivational interviewing. One effective behaviour change intervention for problematic health behaviours is MI. MI, an effective counselling style for behaviour

change derived from the drug and alcohol field, is a therapeutic approach congruent with the Stages of Change framework and aims to alter how the individual observes, feels about, and intends to respond to the problematic behaviour (Miller & Rollnick, 1991). Miller and Rollnick described the fundamental approach of MI as being collaborative, evocative and promoting autonomy. That is, collaboration between the counsellor and the client, which honours the client's expertise and perspectives; Evocation, whereby the resources and motivation for change reside within the client, and the counsellor elicits these perceptions, goals and values; and Autonomy, where the client's right for self-direction is promoted (Miller & Rollnick, 1991). These authors also reported that the four general principles of MI are to express empathy, develop discrepancy, roll with resistance and support self-efficacy.

MI requires that the individual have some ambivalence regarding their behaviour and/or interest in discussing this, and that the counsellor/therapist works in a client-centred, non-challenging way, avoiding mobilising the client's natural resistance to change. Instead, ambivalence is explored and the individual's self efficacy is fostered such that they can become ready to act (Miller & Rollnick, 1991). Studies have shown the potential of the MI approach in reducing sexual risk behaviours (Fisher, et al., 2006; Kuyper, et al., 2009; Naar-King, et al., 2006). MI is not based on any specific theory, rather it was developed in parallel with the Stages of Change framework. Britt, Hudson and Blampied (2004) suggested that linking MI to the Stages of Change model provided a framework for understanding the change process itself, and MI provided a means of facilitating this change process (Britt, et al., 2004). Interventions are adjusted to support this transition more directly (Miller & Rollnick, 1991). Specifically, where the individual

does not wish to change (i.e., there is no ambivalence) (Precontemplation stage), intervention is best directed toward informing the client how to seek support should he or she become concerned about the behaviour in the future. When the individual has some concern (i.e., ambivalence) (Contemplation stage), intervention can be directed toward helping he or she resolve this and make a commitment to action. Finally, when the client is ready to begin changing (Readiness/Action stage), intervention can become implementation-focused through such things as skills training and information provision.

In one study, the principles of MI were incorporated into a brief intervention called the Drinker's Check-up for problem drinkers (Miller & Sovereign, 1989; Miller, Sovereign, & Krege, 1988), a strategy involving a comprehensive assessment of the client's drinking and related behaviours, followed by systematic feedback to the client of findings using a MI communication style. The Drinker's Check-up was extended into a four-session form of MI, which aimed to motivate clients to make changes, rather than provide step-by-step advice about behaviour change (Miller, Zweben, DiClemente, & Rychtarik, 1992).

In addition to the aforementioned strategies, a set (menu) of techniques, which follow the spirit and practice of MI, called Brief Motivational Interviewing (BMI) have been developed for use in a single 40-minute session in primary care settings, with non-help seeking problem drinkers (Rollnick, Heather, & Bell, 1992). A single session of MI was found to reduce drinking by 55-67%. Comparing MI to a directive confrontational feedback session, the authors were able to predict the volume of alcohol consumption 12 months after the intervention from a single therapist's behaviour. That is, if the therapist confronted the client (contrasting the MI approach), the client drank more at follow-up.

The study provided some evidence that confrontation may be counterproductive and that the therapist's behaviour can have a direct impact on a client's motivation for change.

In a review of the literature regarding MI, Britt et al. (2004) suggested that a number of randomised controlled trials of MI with problem drinkers has provided support for the efficacy of this form of intervention in substantially reducing drinking, at up to 18 month follow-up. Pilot studies of MI with other addiction-related client groups (e.g., heroin, cocaine, marijuana, tobacco) have also yielded primarily positive efficacy outcomes (Britt, et al., 2004). Though MI has begun to be used with broader populations such as those with mental health problems, sexual offenders or people with diabetes, the authors noted that there is as yet insufficient data upon which to judge its efficacy (Britt, et al., 2004).

MI has been shown to be efficacious in changing addiction and health related behaviours such as alcohol and illicit drug use (Carroll, Libby, Sheehan, & Hyland, 2001; Graeber, Moyers, Griffith, Guajardo, & Tonigan, 2003); smoking (Gray, McCambridge, & Strang, 2005); adherence to treatment and medication (Swanson, Pantalon, & Cohen, 1999); and diabetes management (West, Dilillo, Bursac, Gore, & Greene, 2007). Studies have also suggested the possible applicability of MI to HIV care, such as improving adherence to antiretroviral therapy (Cooperman & Arnsten, 2005; DiIorio, et al., 2003; Parsons, Rosof, Punzalan, & Di Maria, 2005) and the reduction of substance use among both MSM (Morgenstern, et al., 2009); and HIV positive men and women (Parsons, et al., 2005). More recently, investigations of MI have tested its applicability to HIV prevention, with promising results (Fisher, et al., 2006; Kuyper, et al., 2009; Naar-King, et al., 2006; Patterson, et al., 2005).

3.1.2 Motivational interviewing in HIV prevention. Recently, Fisher et al. (2006) in the USA, undertook a clinician-delivered intervention based on the MI framework in 497 HIV positive men and women. This study, the first of its kind, found that a brief, five to 10-minute client-centred intervention delivered during routine clinical visits by treating medical professionals was successful in reducing self-reported sexual risk behaviours. Participants in the MI group reported a reduction in sexual risk behaviours from a mean of 5.0 unprotected vaginal or anal sexual events at recruitment to 1.5 events at follow-up. In contrast, a standard-care control group increased risk behaviour over the 18 month study period. These findings suggest that MI can successfully achieve and maintain safe sexual behaviours in HIV infected individuals (Fisher, et al., 2006). This study included males and females, heterosexuals and MSM (approximately 12% of this cohort contracted HIV through male to male sexual contact). Therefore, sexual risk behaviours included vaginal intercourse, which is not applicable to the MSM population. Furthermore, only 23% of the cohort met sexual risk criteria (defined as unprotected anal, vaginal or oral sex) in the previous three months. Due to the mixed sample included in this study, the efficacy of MI now needs to be examined in order to test its efficacy in MSM. The results of this intervention suggest MI may successfully achieve and maintain safe sexual behaviours, and shows promise in MSM.

Adding further support to MI as a potential risk reduction strategy was the findings of Naar-King et al. (2006). These authors evaluated the effectiveness of a structured four-session intervention delivered over three months for HIV infected youth (males, females, heterosexual and homosexual) aged 16 to 25 years ($N = 51$). In this

study, MI in combination with cognitive-behavioural techniques, such as problem solving was utilised. Sexual risk taking behaviour and adherence to HIV medication were significantly improved in the group undergoing the intervention relative to a control group, again highlighting the potential benefits of MI in improving health enhancing behaviours. In this study, the MI group had reduced frequency of unprotected sexual acts by an average of 10 events over a three month follow-up period. Naar-King et al. (2006) suggested that MI has the benefit of being tailored to the specific needs of the individual, and to target more than one risk behaviour simultaneously (e.g., UAI, number of sexual partners, substance use) where there is often overlap. Similar to Fisher et al. (2006), Naar-King and colleagues (2006) included a mixed gender sample, with 51% male and 41% identifying as homosexual. Only 25% had unprotected vaginal/anal intercourse at recruitment suggesting that one quarter of the sample had engaged in sexual risk taking in the previous three months. This study further indicated the potential of MI with high risk MSM in an Australian setting. However, this strategy now requires further empirical investigation to establish its efficacy.

In a study of heterosexual methamphetamine users, Mausbach, Semple, Strathdee, Zians and Patterson (2007) trialled MI in order to reduce unprotected sex in their sample. The authors reported a decrease in unprotected sex and increased self-efficacy in negotiating safe sex in those who underwent the MI intervention relative to the control group. These authors noted that improved safe sexual practices were likely due to the improvements in self-efficacy observed in participants. Most recently, Kuyper et al. (2009) conducted a quasi-experimental study in a Dutch STI clinic, comparing MI to an educational counselling session in 428 men and women. In this study, the MI group had

improved self-efficacy, intentions to use condoms with casual partners and long-term condom use with steady partners. There were no significant improvements on condom use with casual partners. Importantly, the authors noted that MI was experienced as more respectful and shown to be deliverable in the busy real-world setting. The efficacy of MI as a sexual risk reduction intervention has also been evaluated in other HIV/STI risk groups, specifically female sex workers in Mexico. Patterson and colleagues (2008) evaluated the effects of MI on condom use among 924 women and included a biological outcome (STI result) at six months following the intervention. These authors reported a 40% decrease in cumulative STI incidence, and increased condom use in the participants who underwent the MI intervention. These results indicated that MI had an impact on both behavioural and biological outcomes, and shows real potential in reducing STI transmission, including in resource poor settings. Due to the mixed samples included in these study, the efficacy of MI now needs to be examined in order to test its efficacy in MSM.

Given the accumulating evidence regarding the role of readiness in behaviour change, further study of MI with MSM clients at risk of HIV transmission appears essential in the context of increasing diagnosis of HIV/STIs. Though some support exists for the effectiveness of targeted, skills-based interventions in bringing about behaviour change, evidence for this is mixed and the outcomes appear influenced by variables such as the type of behaviour targeted, the nature of the client group, and the point in time at which the intervention is offered. Taken together this accumulating evidence points to the value of more complex models of behaviour change, which go beyond a focus on uni-

dimensional variables, simple cause-effect relationships, and the implementation of change, to multiple variables, complex mediated relationships, and readiness for change.

3.2 Summary

In summary, interventions for HIV/STI prevention in Australia achieved considerable success in containing the spread of the virus in the early years of the pandemic. The recent increases of HIV/STI, however, confirm the ongoing challenges faced by health promotion strategies in containing the spread of HIV. Appreciating the mental health status, as well as predictors of sexual risk taking behaviours, is important for interventions to be effective in this high-risk group. There is an urgent need for early and brief interventions at the primary care level for MSM at risk of HIV/STI transmission. MI has been shown to be efficacious in changing addiction-related health behaviours (e.g., alcohol, heroin, cocaine) and early studies have suggested its applicability to HIV prevention. As past research has included mixed gender samples and consisted of both heterosexuals and MSM, it is necessary to investigate the efficacy of MI in high risk MSM, to confirm the utility of this brief intervention in reducing sexual risk behaviour among this established high-risk group. None of the studies reviewed in this chapter have been conducted in Australia. Therefore, there is an urgent need to explore the effectiveness of MI on Australian MSM with high levels of concurrent STIs to reduce sexual risk behaviour in this group.

CHAPTER FOUR: THE RESEARCH DESIGN AND METHOD

The study consisted of two sequential phases, which are described in the following section.

4.0 The Experimental Design

For phase one (reported in papers one and two), MSM accessing a sexual health and infectious diseases clinic for routine care were invited to participate. Phase one employed a cross-sectional design study to assess and compare the mental health status of MSM attending primary care clinics in Melbourne, and to determine psychological factors associated with high and low sexual risk taking behaviour in these men (see Figure 4.1).

For phase two (reported in paper three), MSM who completed phase one were assessed for eligibility (high sexual risk behaviour) and were invited to take part in the study. Phase two was a prospective randomised control trial (RCT) of MI to reduce sexual risk taking behaviours in MSM over a four month follow-up period. Those who agreed to participate were randomised into either the two-session MI intervention group (30-45 minute face-to-face session and 15 minute telephone 'booster' session after one month) or the standard care control group. All participants were assessed at one and four-months follow-up. The study was a 2 (Group – MI, Control) by 3 (Time – before, 1-month and 4-months post-MI intervention) design. Baseline sexual risk measures were included to determine post-intervention effects. Follow-up time assessments were included to assess immediate (1-month) and sustained (4-month) effects post-intervention. A RCT design was best suited to capture the effects of an intervention and

minimises the bias associated with non-equivalent groups (Tabachnick & Fidell, 2001).

Figure 4.1 contains a flow chart of the study design incorporating phases one and two.

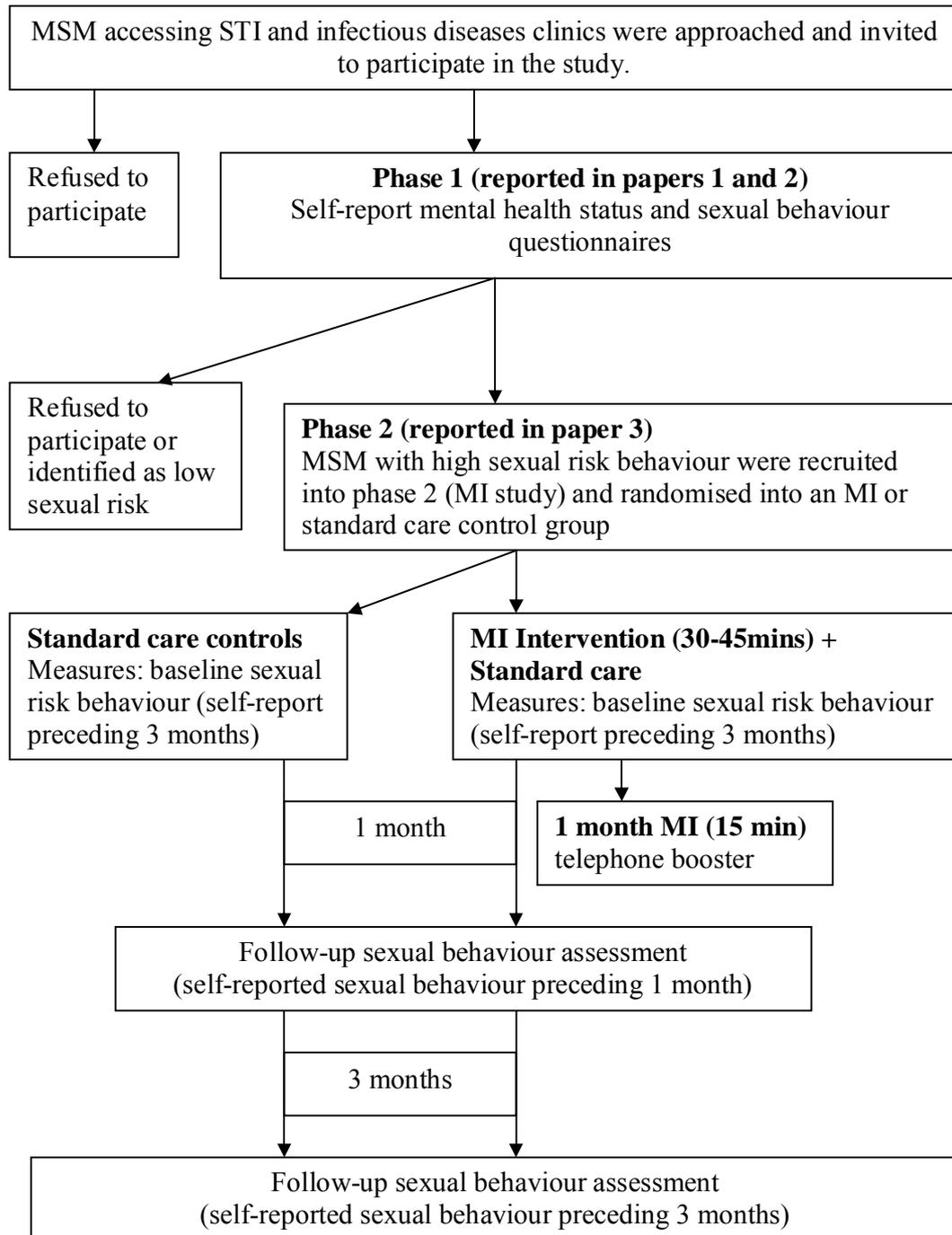


Figure 4.1. Flow Chart of Study Stages.

4.1 Ethical Approval

This research was approved by Monash University and The Alfred Hospital's research ethics committees, in line with the National Health and Medical Research Committee's guidelines for research with human participants. The participant plain language statement, consent form and ethics approval are contained in Appendix A and B.

4.2 Recruitment and Sample

Phase One (reported in papers one and two)

Participants were 250 MSM accessing a large metropolitan sexual health clinic and a hospital infectious diseases outpatient clinic in Melbourne Australia, between October 2008 and January 2009. The response rate for phase one was high (88% of 284 invited to participate). The participants were all male, with a mean age of 33 ($SD = 11.8$, $minimum = 18$, $maximum = 71$) years. The majority of men were single (65%) and tertiary educated (46%) and approximately two-thirds (67%) were Australian born. Almost half (47%) of the men were working full-time, with 16% working part-time and 14% identifying as students.

4.3 Measures

4.3.1 Sociodemographic factors and sexual health medical history.

Sociodemographic factors were age, country of birth, highest education level attained and relationship status. The current study used the sociodemographic data for descriptive purposes, and for examining relationships between age and mental health. Self-report of past sexual health variables were HIV status, HIV/STI testing history and past positive STI tests.

4.3.2 Sexual behaviour. The dependent variable sexual behaviour was determined at recruitment by self-report for the previous three months. Participants were also questioned about their most recent sexual partner, which acted as a memory anchor to minimise memory recall bias (Dudley, Rostosky, Korfhage, & Zimmerman, 2004). These timeframes were included in this study to allow for comparison with past research (i.e., Benotsch, et al., 2001; Dudley, et al., 2004; Fisher, et al., 2006). The total number of anal sex partners, including the number of regular and casual partners, as well as the number of protected and unprotected anal sex events was determined. Participants were also asked about the HIV status for their partner(s). Developing a reliable and valid measure of sexual risk behaviour remains a difficult issue for research in this area, as self-report can lead to reporting and memory bias. However, a consensus on what constitutes 'risk' has emerged in the literature and was therefore included in this study (Frankland, et al., 2008).

4.3.2.1 Sexual risk behaviour. Sexual risk behaviour was defined as UAI with a casual partner(s) and/or UAI with a serodiscordant or unknown HIV status regular

partner(s) over the past three months, well recognised as the riskiest behaviours for HIV/STI transmission in MSM (Beck, et al., 2003; Frankland, et al., 2008).

4.3.3 Substance use. Reliably measuring substance use (alcohol and illicit drugs) in a cross-sectional design study remains difficult and relies on self-report, creating similar issues when measuring sexual behaviours. In this study, frequency measures were used of immediate use (daily/weekly) and longer use (6 months) based on past research (Clutterbuck, et al., 2001). Alcohol use frequency was measured via two self-report questions assessing general use (daily, weekly, monthly frequency) as well as frequency of binge drinking episodes (≥ 6 standard drinks in one sitting) based on the National Health and Medical Research Council (NHMRC) guidelines (2001). Drug use frequency was measured for marijuana, amyl/poppers, ecstasy, speed, crystal/ice, cocaine and heroin. For each drug, participants were given the following forced choice options: 5 = More than weekly, 4 = Weekly, 3 = Less than weekly, 2 = Not in the last six months, 1 = Not in the last 12 months and 0 = Never. A variable Recreational Drug Use was calculated by computing the sum of scores for marijuana, speed, ecstasy, crystal and cocaine (see section 4.6.2 on data reduction technique for a detailed description). In this study, the Cronbach alpha coefficient for Recreational Drug Use was high ($r = .88$).

4.3.4 Sexual Sensation Seeking Scale (SSSS) (Kalichman & Rompa, 1995). This instrument is an 11-item measure using a 4-point response format, with responses ranging from 1 (Not at all like me) to 4 (Very much like me). The SSSS was designed to measure the construct of sensation seeking specifically related to sexual interests and activities. High scores on the sensation seeking construct encompasses thrill and adventure seeking, experience seeking, disinhibition and boredom susceptibility

(Zuckerman, 1994). Items were developed based on Zuckerman's (1994) Sensation Seeking Scale. The scale was adapted and revised to reflect sexually relevant themes, for example "I like wild 'uninhibited' sexual encounters" and "I enjoy watching x-rated videos" by Kalichman et al. (1994). Originally developed in 106 MSM, it was further retested and shown to have an internal consistency of $r = .79$ and test-retest coefficient of $r = .69$ in a sample of 296 MSM, indicating the scale has moderate reliability (Kalichman, et al., 1994; Kalichman & Rompa, 1995) and correlates with a range of sexual practices indicating adequate construct validity (Kalichman & Rompa, 1995). In this study, the Cronbach alpha coefficient was $r = .77$.

4.3.5 Sexual Compulsivity Scale (SCS) (Kalichman & Rompa, 1995). This is a 10-item scale developed to assess tendencies toward sexual preoccupation and obsession, with high internal consistency with alpha coefficients ranging between $r = .85$ and $r = .91$ (Kalichman & Rompa, 1995). The scale was developed from a self-help guide for men and women with sexual control problems and difficulty in managing their sexual thoughts and behaviours. Items were drawn from the guide into a four-point scale, with responses ranging from 1 (Not at all like me) to 4 (Very much like me). Scale items include "My sexual appetite has gotten in the way of my relationships" and "My sexual thoughts and behaviours are causing problems in my life". A series of studies with risk groups for HIV have shown internal consistency and reliability, with alpha coefficients ranging between $r = .84$ and $r = .89$, and acceptable test-retest reliability, with correlations between $r = .64$ and $r = .95$ (Kalichman, et al., 1994; Kalichman & Rompa, 1995). High scores have been shown to predict sexual behaviours in MSM, numbers of

sexual partners and history of STIs (Benotsch, et al., 1999; Kalichman & Rompa, 1995). In this current study, the Cronbach alpha coefficient was high ($r = .89$).

4.3.6 Impulsivity Scale (Dickman, 1990). Impulsivity, defined as the tendency to act without thinking and without regard for the negative consequences of an action, was measured using the 12-item self-report impulsivity scale developed by Dickman (1990), and was included in this study as it has been shown to predict sexual risk behaviours (Semple et al., 2000). A sample item includes “Often I don’t spend enough time thinking over a situation before I act”. Participants respond true or false to each statement. Developed over a three phase study and shown to be reliable and internally consistent, Dickman (1990) reported that individuals with dysfunctional impulsivity were more likely to ignore hard facts when making decisions, which in the case of sexual behaviour, may be involved in calculating risk associated with unprotected sex. The scale has a reported reliability of $r = .87$. In this study, the Cronbach alpha coefficient was $r = .61$.

4.3.7 Personality assessment screener (PAS) (Morey, 1997). This measure is a 22-item questionnaire assessing general social and psychological functioning and was included as a screening instrument to evaluate different domains of clinical functioning consistent with the Diagnostic and Statistical Manual of Mental Disorders (DSM-IV; American Psychiatric Association, 1994). The PAS was included in this study as it gives an overall score of psychological distress as well as containing 10 different subscales representing distinct types of clinical problems. The 10 PAS domains are Negative Affect - unhappiness and apprehension; Acting Out – impulsivity and sensation seeking; Health Problems - somatic complaints and health concerns; Psychotic Features - persecutory

thinking; Social Withdrawal - social detachment; Hostile Control - needs for control; Suicidal Thinking - thoughts of death or suicide; Anger Control - anger management difficulties; Alienation - failures of supportive relationships; and Alcohol Problem - alcohol use/abuse (Morey, 1997) The test supplied description of the 10 domains are contained in Appendix C. Scores are transformed to a probability estimate of the likelihood of being in one of four categories (Normal, Mild, Moderate, Marked) for a clinical diagnosis based on the DSM-IV if the person were to complete a full psychological assessment. Scores in the Marked range indicate a 75% to 99% chance that the individual is experiencing some type of clinically significant psychological problem. The reliability of the PAS in the clinical standardisation sample of 1,246 patients was .79. Test-retest reliability for a sample of 75 community-based adults tested 24 days apart was $r = .89$ (Morey, 1997). The Cronbach alpha coefficient in the current study was moderate ($r = .69$).

4.3.8 Condom-use self efficacy questionnaire (Kalichman, Stein, Malow, Averhart, Devieux, et al., 2002). This measure consists of three questions designed to assess self-efficacy relating to condom use, that is the confidence that one has in the ability to perform a specific behaviour (i.e., condom use) under challenging conditions. Based on Bandura's (1989) social-cognitive theory and revised to reflect HIV/AIDS risk reduction themes, Kalichman et al. (2002) found these items to be valid and reliable measures of self-efficacy relating to condom use. Items included "It's hard to always use condoms", "Safer sex is hard when you're really turned on to someone" and "It's hard to use condoms if you feel you really know someone". Scores ranged from 1 (disagree strongly) to 4 (agree strongly). The Cronbach's alpha coefficient in the current study was

$r = .79$. Past research has found self-efficacy scores to be related to sexual risk taking behaviours (Kalichman, et al., 2002) and is sensitive to change following HIV risk reduction interventions (Kuyper, et al., 2009; Patterson, et al., 2008).

4.3.9 Negotiation skills. Participants were given a list of personal characteristics involved in negotiating safe sex which included ‘Self worth’, ‘Capacity to assert yourself’, ‘Knowledge of safe sex practices’, ‘Capacity to negotiate safe sex’ and the ‘Capacity to say no under pressure’. Participants were asked if they had used these skills to increase their safety during sexual encounters over the previous three months. The response range was 1 (Always) to 4 (Never). Past research has found these questions to be related to sexual risk taking in MSM attending for HIV/STI testing, with MSM who reported ‘sometimes’ or ‘never’ using these skills were twice as likely to have sexual risk behaviour in the preceding three months compared to those men who reported ‘always’ using these skills (Gibbie, et al., 2008).

4.3.10 Transtheoretical model of behaviour change/Stages of change (Prochaska & DiClemente, 1983). The Transtheoretical model of behaviour change was assessed using the Readiness Ruler (LaBrie, Quinlan, Schiffman, & Earleywine, 2005), which was developed in line with this framework (Prochaska & DiClemente, 1983). The Transtheoretical Model consists of five stages involved in readiness to change health risk behaviours (i.e., Precontemplation, Contemplation, Preparation, Action and Maintenance). Participants were asked to rate their readiness to change their condom use by circling their position on a 10-point Likert scale/ruler that best represents them. The ruler ranges from zero (“Never think about safe sex”) to 10 (“My condom use has changed to ‘use always’”). This scale was chosen because it is quick and inexpensive to

use, and therefore has “real world” clinical applicability compared to some longer assessment tools. This scale, developed from a much longer scale (Rollnick, Heather, Gold, & Hall, 1992) has been shown to have construct validity ($r = .77$) and predicted intentions to use condoms (LaBrie, et al., 2005). The scale assessed each participant’s position on the Stages of Change for condom use to examine the contribution of this framework in differentiating between risk groups, similar to past research (Semple, Patterson, & Grant, 2004).

4.3.11 HIV knowledge questionnaire (HIV-KQ-18) (Carey & Schroder, 2002).

This is a validated 18-item questionnaire assessing knowledge of HIV/AIDS. This measure was chosen to ensure that sexual risk behaviour was not due to a lack of HIV knowledge. Scores are given for each correct response, with the highest score 18 out of a total of 18. The HIV-KQ-18 was developed from a much longer scale and has internal consistency across samples ($r = .75$ to $.89$), test-retest stability across several intervals ($r = .76$ to $.94$), and strong associations with a much longer, previously validated measure ($r = .93$ to $.97$) (Carey & Schroder, 2002). Therefore, the HIV-KQ-18 is internally consistent and stable. The Cronbach alpha coefficient in this study was $r = .63$. A copy of the self-report questionnaires containing the aforementioned measures can be found in Appendix D.

4.4 Procedure - Phase One

4.4.1 Participant recruitment and procedure. Inclusion criteria were MSM, age 18 years and over, who were able to read and write in English. MSM attending

Melbourne Sexual Health Centre and the infectious diseases outpatient clinic of a large inner-city Metropolitan teaching hospital were informed of the study by the clinic nurse and invited to participate. Those who agreed to participate were introduced to the student researcher and, following an explanation of the study, completed the informed consent procedure and received the self-report questionnaires. Participants were instructed to complete the questionnaires as accurately as possible, and although the material was extremely personal, responses were confidential. To encourage accurate answers, participants returned completed questionnaires to a confidential box situated in a private area of the clinic reception.

4.5 Data Management

The analysis from phase one (see papers one and two) will be reported in the following section. Firstly, a brief descriptive overview of the data management will be presented, including data screening and the data reduction technique used in this study. Next the key analyses will be described. The Statistical Package for the Social Sciences (SPSS) Version 17.0 (SPSS, 2008) was used for all data analysis. P-values were set at 0.05. All completed questionnaires were stored in a locked filing cabinet, which was located in an office with restricted entry to those directly involved in the study. All questionnaires were de-identified and these data were entered into an SPSS database which was only accessible to the student researcher.

4.5.1 Data cleaning, assumption testing and review. Prior to analysis, the data set was checked for accuracy of data entry, missing values and the distribution of data. All analyses were performed using SPSS Version 17.0. Continuous variables were checked for normality to test for the impact of outliers. The 5% trimmed mean value revealed all mean values were very similar, and therefore outliers ($n = 7$) were not removed from the data file, as suggested by Tabachnick and Fidell (2001). Tests for multicollinearity revealed high tolerance levels (> 0.1) supporting low correlations between dependent variables. Therefore the assumption of multicollinearity was not violated.

4.5.2 Missing data. Missing Value Analysis test was performed using Little's MCAR test and the result was $\chi^2 = 856.14$ ($df = 1119$, $p = 1.00$). This indicated that missing data was random. This algorithm (expectation maximisation) was used as it has the advantage of providing a less biased estimate of missing data relative to mean substitution (Tabachnick & Fidell, 2001). Incomplete data ($>10\%$ missing) were found in 11 participants, so these cases were removed leaving a final sample of $N = 239$.

4.6 Data Analysis

This section describes the handling of the data and data analysis for phase one.

4.6.1 Recreational drug use. Self-report of illicit drug use indicated that participants commonly used several drugs concomitantly. Therefore, a factor analysis with principle components (PCA) extraction and oblique rotation was undertaken to

determine the clustering of the seven types of drugs measured (i.e., marijuana, amyl/poppers, ecstasy, speed, crystal/ice, cocaine, heroin). Prior to performing this procedure, the suitability of data for factor analysis was assessed. Inspection of the correlation matrix revealed the presence of many coefficients of .3 and above. The Kaiser-Meyer-Olkin value was .87, exceeding the recommended value of .6 and the Bartlett's Test of Sphericity was statistically significant, supporting the factorability of the data set (Tabachnick & Fidell, 2001). PCA revealed the presence of two components with eigenvalues exceeding 1 and explaining 53.2% and 14.1% of the variance respectively. The two items (amyl/poppers and heroin) that comprised component two were factor complex, since they also loaded on component one (the pattern matrix is contained in Appendix E). An examination of the scree plot revealed a clear elbow after component one, further supporting a single component solution. Therefore, a variable Recreational Drug Use was calculated by summing participant self-reported frequency of marijuana, speed, ecstasy, crystal and cocaine use (excluding amyl/poppers and heroin). In this study, the Cronbach alpha coefficient for Recreational Drug Use was high ($r = .88$).

4.6.2 Phase one: Data analysis. The aim of the first study (reported in paper one) was to examine the mental health status of MSM participants, and to determine the relationship between psychological symptoms, substance use and HIV status.

Pearson's product moment correlation coefficients (Pearson's r) were used to examine relationships between PAS total score (psychological distress) and PAS domain scores. In order to examine the relationships between PAS domain scores and each of the

illicit drugs, Spearman's Rank Order Correlation coefficients for ordinal data were used due to the nature of the illicit drug use data being ordinal (Tabachnick & Fidell, 2001). Ten independent samples t-tests were used to examine group differences on PAS scores between HIV positive and negative MSM. Standard regression analysis was utilised to examine relationships between the dependent continuous variable (PAS total score measuring psychological distress) and the independent variables age, education, HIV status and Recreational Drug Use score and alcohol use, to ascertain how much of the variance in the dependent variable could be explained by this set of independent variables, as recommended by Tabachnick and Fidell (2001). B and standardized beta coefficients (β) are reported. The results of this analysis are reported in paper one.

The aim of the second study (reported in paper two) was to examine differences between those who reported high risk sexual behaviour and those who reported low sexual risk behaviour on the key psychological variables and to determine which of these psychological variables predicted sexual risk behaviour. The independent variables chosen based on past research were number of sexual partners (preceding three months), SSSS, SCS, impulsivity, self-efficacy, Negotiation Skills, PAS Negative Affect, Recreational Drug Use, Alcohol use, HIV knowledge scores and Stage of Change. The dependent categorical variable was high risk sexual behaviour (yes/no). Group allocation was based on each participant's self-report of UAI with a casual and/or serodiscordant or unknown HIV status partner (high risk sexual behaviour = yes). Independent t-tests were used to determine mean differences on the independent continuous variables.

4.6.2.1 Prediction of high and low sexual risk behaviour: As the dependent variable was categorical (high/low risk), a logistic regression model was tested to

determine which psychosocial, personality and behavioural variables predict sexual risk behaviour in MSM, as suggested by Tabachnick and Fidell (2001). B coefficients, Wald χ^2 , odds ratios and Confidence Intervals are reported.

4.7 Phase Two – RCT of a MI Risk Reduction Intervention

Phase two of this study is reported in paper three, and describes a MI risk reduction intervention for MSM with high sexual risk behaviour. MSM who were identified in phase one (reported in paper two) with high sexual risk behaviour were invited to take part in order determine if MI was successful in reducing sexual risk behaviour in high risk MSM.

4.7.1 The study design and participant recruitment. Phase two of this study was a prospective RCT design, with retrospective recall for baseline behavioural measures, investigating the usefulness of MI to reduce sexual risk taking behaviours in MSM over a four-month post-test follow-up period. MSM were informed of the study after completing phase one questionnaires and, if meeting eligibility criteria, were invited to take part. MSM who were identified as having high risk sexual behaviour in the preceding 12 months were invited to participate in phase two, consistent with past research (Koblin, et al., 2004). Inclusion criteria were MSM, over 18 years of age, high risk sexual behaviour over the previous 12 months (i.e., UAI with casual partner or UAI with serodiscordant/unknown HIV status regular partner) and capacity for informed consent.

4.7.2 The sample. The participants were male, with a mean age of 31.3 ($SD = 11.5$, minimum = 18, maximum = 60) years. The majority of men were single (74%) and tertiary educated (60%), with approximately half (51%) of participants working full-time and 22% identifying as students. Fifteen men who were eligible for the study (22%) declined to participate because of time constraints or lack of interest in participating, leaving a 78% response rate.

The initial sample consisted of 54 participants. Of these 54, 13 (7 MI and 6 standard care controls) did not complete the intervention ($n = 7$) or one month data collection ($n = 6$), either because they repeatedly missed MI appointments or were lost to follow-up. Data on 41 participants (59% of eligible participants) were therefore available for inclusion in the one month follow-up analyses. Of these 41 (20 MI and 21 standard care controls), a further 9 were lost to follow-up at four months post-test, leaving a four-month follow-up sample of 16 MI and 16 standard care controls (see Table 4.1 for the study participation rates).

Table 4.1.

Number of Participants at Each Time Point for the MI Experimental and Standard Care Control Groups

Group	Time 1 Pre-Test	Intervention	Time 2 1 month Post-Test	Intervention	Time 3 4 months Post-Test
MI Experimental	$n = 27$	MI + standard care	$n = 20$	MI booster	$n = 16$
Standard Care Control	$n = 27$	Standard care only	$n = 21$	Nil	$n = 16$

4.8 Procedure

MSM identified during phase one as having high risk sexual behaviour, defined as UAI with casual partners and/or UAI with serodiscordant/unknown HIV status regular partner(s) in the preceding 12 month period, were recruited for the MI intervention study. MSM were informed of the study by the student researcher and invited to take part after completing phase one questionnaires. Those who met eligibility criteria and agreed to participate completed the informed consent procedure and were randomised at the clinic level in blocks of 10 (using the Excel software random number function) into either the MI intervention group or the standard care control group. The outcome variable (sexual behaviour) was measured at one and four-months post-test via a telephone interview. Telephone interviewers were research assistants with honours degrees in psychology and were blind to participant group membership.

4.8.1 MI intervention condition. Participants assigned to the intervention condition received the intervention, delivered by the student researcher, incorporating a 30 to 45 minute MI session (face-to-face within two weeks of recruitment) and a 15-minute booster telephone call one month later. Utilising the MI framework, MSM were asked how their sexual risk taking behaviour related to their general life and well-being. Discrepancies identified by the participant between their sexual health/risk taking and overall life goals and values were explored using MI principles and micro skills (Miller & Rollnick, 2003). Miller and Rollnick described the four general principles of MI as to

express empathy, develop discrepancy (between current behaviour and overall life goals/values), roll with resistance and support self-efficacy. The micro-skills used in MI were described by Miller and Rollnick as open-ended questions, affirmations, reflections and summaries.

In the MI session, participants were also instructed to choose a target behaviour most personally relevant to them and to generate a list of the enablers and barriers for maintaining or changing their target behaviour using the decisional balance matrix. After they had exhausted their self-generated pros and cons, participants used the Importance and Confidence Readiness Rulers, two 10-point Likert scales/rulers from zero to 10, assessing how 'important' and how 'confident' the individual perceived themselves to be in changing their current sexual practices. This tool is a basis from which to explore their ambivalence and confidence towards changing their behaviour. Participants generated one goal to be pursued in the following month, and were instructed that progress on this would be explored in a telephone booster session. This goal was written on the 'prevention prescription pad', a behavioural prescription, described by Fisher et al. (2006) and given to the participant, with a carbon copy retained by the therapist. In the phone call booster at one month (10-15 minutes), the issues identified during the first face-to-face session were further explored using MI. The MI manual and materials are contained in Appendix F.

4.8.2 Standard care control condition. Participants randomised to the control arm received the standard medical care and treatment of HIV/STI(s) within the clinic context as well as the follow-up assessment phone calls. These participants were triaged

by the clinic nurse, followed by a consultation with the treating doctor for STI testing or results and/or HIV routine treatment.

4.9 Measures

All participants completed self-report questionnaires from phase one and the additional measures described below.

4.9.1 Sexual behaviour. Consistent with phase one (see section 4.3.2), participants were asked about sexual risk over the preceding three months at recruitment (baseline measure).

4.9.1.1 Follow-up sexual risk behaviour: In the follow-up telephone calls sexual risk at one- and four- months post-test and sexual behaviour during the intervening periods were determined. Participants were also queried about issues that may have constituted confounding variables over the follow-up period. These included changes in relationship status, STI testing and STI results. Participants were also asked to nominate any other risk reduction strategies they had employed over the follow-up period that were not included in the interview protocol.

4.9.2 Laboratory confirmed STI test result. Participant's medical records were accessed for the STI test results (i.e., for chlamydia, syphilis, gonorrhoea) and HIV to ensure equivalent groups at recruitment (baseline).

4.10 Data Management

The analyses for phase two (reported in paper three) is described in the following section. Firstly, a brief descriptive overview of the data management is presented,

including data screening and the key analyses. As in phase one of the study, SPSS Version 17.0 (SPSS, 2008) was used for all data analyses and data were stored securely. Using G*Power 3 (Faul, Erdfelder, Buchner, & Lang, 2009), it was determined that the sample size of $N = 50$ would achieve a power of 80% to detect a difference of 25% between the MI and standard care control groups with alpha set at 0.05.

4.10.1 Assumption testing. Prior to analysis, the data set was checked for accuracy of data entry, missing values and the distribution of data. Continuous variables were checked for normality to test for the impact of outliers. Due to non-normal distribution of sexual partner data at baseline and post-test, change scores for the total number of sexual partners were calculated by subtracting baseline scores (i.e., the number of sexual partners in the preceding three months) from the one and four-month post-test data. The distribution of sexual partners and change scores were non-normal at one-month follow-up (Kolmogorov-Smirnov = .003), therefore non-parametric tests were chosen to determine group differences between the MI and standard care control groups as suggested by Tabachnick and Fidell (2001).

4.10.2 Statistical analysis to determine the impact of MI. The aim of this study was to determine the impact of the MI on sexual risk behaviour (UAI with casual and/or serodiscordant/unknown HIV status regular partner) and number of sexual partners over one and four-months follow-up.

4.10.2.1 Changes in sexual risk behaviour: To determine the impact of MI on changes in risk behaviour (UAI yes/no), Pearson's chi-square for equal cell sizes and

Fisher's Exact test for unequal cell sizes were used to test for between-group differences at one and four-month post-test on sexual risk behaviour (yes/no).

4.10.2.2 Changes in frequency of sexual partners: Independent t-test and Mann-Whitney U test compared change scores between the MI intervention and standard care control groups (between-subject effects). As the distribution of sexual partners and change scores were non-normal at one-month follow-up (Kolmogorov-Smirnov = .003), Mann-Whitney U Test was utilised to compare change scores between the MI intervention and standard care control groups. The distribution of sexual partners and change scores met the assumption of normality at four-month post-test (Kolmogorov-Smirnov = .012), therefore independent t-test tested for between group differences at four-month post-test as suggested by Tabachnick and Fidell (2001).

To examine the differences over time for the MI and Control group on sexual partner change scores, within-subject effects were conducted using a one-way repeated measures analysis of variance (ANOVA) to evaluate baseline, one and four-month follow-up post-test scores for the MI intervention group and for the standard care control group.

4.10.3 Lost to follow-up. To examine whether drop-out was evenly distributed across groups, a Fisher's exact test was used to determine differences between two categorical variables (group membership and UAI yes/no) as is applicable to use with small sample sizes and is recommended by Tabachnick and Fidell (2001). Independent t-tests, to test for group differences between frequency of continuous variables (age, frequency of sexual partners) were conducted. To examine whether drop-out was

equivalent across groups, sociodemographic variables for those who completed the four-month follow-up and those lost to follow-up after completing one-month data collection are included in Table 4.2.

Table 4.2.

Comparison of Study Completers (n = 32) and Those Lost to Follow-Up (n = 9) on Sociodemographic Variables

Variable	Completers <i>n</i> = 32	Lost to follow-up <i>n</i> = 9
Sociodemographics		
Age (mean, <i>SD</i>)	32.5 (11.7)	25.2 (5.8)
Education		
	% <i>n</i>	% <i>n</i>
Yr 10		11.1 (1)
Yr 12	37.5 (12)	22.2 (2)
Tertiary/TAFE	62.5 (20)	66.6 (6)
Relationship Status		
Single	71.9 (23)	77.8 (7)
Partner	28.1 (9)	22.2 (2)
Employment		
Full-time	43.8 (14)	66.7 (6)
Part-time	18.8 (6)	11.1 (1)
Student	21.9 (7)	22.2 (2)
Pension/DSP	6.3 (2)	0.0 (0)
Unemployed	6.3 (2)	0.0 (0)

As is evident from the results in Table 4.2, those who were lost to follow-up at four months were younger and more likely to be employed full-time than those who completed the follow-up assessments. Sexual behaviour at recruitment (baseline) and one-month follow-up for study completers and those lost to follow-up are described in Table 4.3.

Table 4.3.

Comparison of Study Completers (n = 32) and Those Lost to Follow-Up (n = 9) on Sexual Behaviours at Baseline and One-Month Follow-up

Variables	Completers <i>n</i> = 32	Lost to follow-up <i>n</i> = 9
Sexual Behaviour – Baseline		
Total sexual partners	(mean, <i>SD</i>)	(mean, <i>SD</i>)
Past 3 months	6.3 (6.1)	10.7 (8.4)
Past 12 months	17.5 (21.1)	23.5 (18.4)
Casual partners		
Past 3 months	5.6 (6.2)	10.2 (8.7)
Past 12 months	15.9 (20.5)	22.0 (17.9)
Regular partners		
Past 3 months	0.6 (0.7)	0.5 (0.5)
Past 12 months	2.2 (4.9)	1.5 (1.7)
Sexual behaviour – 1 month FU		
Total sexual partners	(mean, <i>SD</i>)	(mean, <i>SD</i>)
Total sexual partners	1.7 (1.5)	6.7 (11.5)
Number of casual partners	1.3 (1.3)	6.3 (11.8)
Number of regular partners	0.4 (0.8)	0.4 (0.5)
Risk at 1 month (% <i>n</i>)	28.1 (9)	22.2 (2)

These analyses revealed no significant differences between the 32 participants who completed the four-month post-test data collection and the nine who were lost to follow-up on sexual risk behaviour measures at one-month post-test (proportions of UAI, $p = .544$, Fisher's exact test and frequency of sexual partners ($t(39) = 2.44$, $p = .232$). The two groups differed on age ($t(39) = -2.56$, $p = .016$), with the those lost to follow-up being on average younger (mean age of 25 versus 32) years.

CHAPTER FIVE: HIGH LEVELS OF PSYCHOLOGICAL DISTRESS IN MSM IS INDEPENDENT OF HIV STATUS

5.0 Preamble to Phase One Paper One

As outlined in Chapter 2, past research has shown that the mental health status of some HIV positive MSM is compromised, and that psychological disorders, such as depression and substance use disorders, may also be elevated in those at risk of HIV infection. The first step in assessing the relationship between sexual risk and psychological health is to identify the mental health status of both HIV positive and HIV negative MSM.

The following two chapters will describe phase one (reported in papers one and two), a cross-sectional design study outlined in Section 4.2 of the previous chapter. The study was designed to assess and compare the mental health status of MSM attending primary care clinics in Melbourne, and to determine psychological factors associated with high and low sexual risk taking behaviour in these men.

5.1 Introduction to Paper One

This chapter constitutes an article submitted to the *Journal of Health Psychology* for publication. The aim of the study reported in this paper was to examine the mental health status of MSM accessing a sexual health and infectious diseases clinic. A further aim was to determine the impact of HIV status on participant's mental health, and to

examine relationships between psychological symptoms, sociodemographic characteristics, substance use and HIV status.

5.2 High Levels of Psychological Distress in MSM is Independent of HIV Status.

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Abstract

Background. This study assessed the prevalence and type of psychological distress in men who have sex with men (MSM) accessing a sexual health and infectious diseases (ID) clinic in Melbourne, Victoria, Australia. It also explored relationships between psychological distress, HIV status, alcohol and illicit drug use in this group.

Methods. A cross-sectional convenience sample of 250 MSM attending for routine care (HIV positive $n = 52$, HIV negative $n = 198$) were recruited from September 2008 to January 2009. Participants completed self-report questionnaires including sociodemographics, substance use and the Personality Assessment Screener (PAS).

Results. Approximately one-third ($n = 83$) of the sample scored in the clinically significant range on the PAS total score, predicting potential serious mental health problems. The PAS domains of Negative Affect and Suicidal Thinking significantly positively correlated with overall psychological distress (Pearson's $r = .53$), with 27% and 29% of participants in the clinically significant range for these domains respectively. Amphetamine use also significantly correlated with psychological distress (Spearman's $\rho = .35$). HIV positive participants scored significantly higher on the PAS Social Withdrawal and Health Problems domains, and lower on binge drinking frequency relative to HIV negative participants. There were no significant differences between HIV diagnostic groups on overall psychological distress score. Employment status and drug use accounted for 20.5% of psychological distress scores in a multivariate analysis.

Conclusions. A third of the MSM attending primary health services in this study displayed clinically significant psychological distress with disturbingly high levels of mood disturbance and suicidal thinking. This warrants further clinical assessment and indicates the need to identify modifiable contributing factors to the mental health of this group. The use of psychological screening questionnaires in addition to sexual health assessment of MSM attending sexual health and ID clinics may provide valuable information for improving the psychological well-being of this client group, regardless of their HIV status.

Introduction

The highest prevalence of HIV infection in Australia is among MSM, and the diagnosis of HIV is increasing in this group (Department of Human Services, 2010). Sexual health research has contributed to a growing body of literature on the mental health and well-being of MSM. Advances in treatment have resulted in the transition of HIV management from an acute illness to a chronic and manageable health condition. Consequently, mental health and emotional well-being have emerged as important aspects to consider in the overall management of people living with, and at risk of, HIV/AIDS.

Studies have demonstrated elevated levels of mental health problems in HIV positive populations as well as those in high-risk groups, such as MSM. International studies in the U.S.A. and the U.K. have consistently reported high rates of suicidality among homosexual men, particularly adolescents and young adults at highest risk (Bagley & Tremblay, 1997). Epidemiological studies confirm that MSM are four times more likely to report a serious suicide attempt than heterosexual men (Bagley & Tremblay, 2000; Remafedi, French, Story, Resnick, & Blum, 1998). In a longitudinal study of homosexual men and women in New Zealand, Fergusson, Horwood and Beautrais (1999) found an increased risk of suicidal ideation and suicidal behaviour, major depression, generalised anxiety disorder, conduct disorder and substances use disorders when compared to heterosexual controls. Sherr et al., (2008) assessed the seven-day prevalence of suicidal ideation in men and women receiving primary care for HIV in London and the surrounds. The investigators reported a 31% prevalence of suicidal ideation in their patients which was independently associated with sexual

orientation and ethnicity. In this study of HIV positive patients, being heterosexual increased the odds of suicidal ideation two-fold.

In a household telephone survey of MSM in four large cities in the U.S.A., Stall et al. (2003) investigated the extent to which a set of psychosocial health problems had an additive effect on increasing HIV risk. These authors reported that psychosocial health problems, such as depression, substance use, childhood sexual abuse and partner violence were highly correlated among their sample, as well as independently predicting the other psychosocial variables. For example, depression was independently associated with childhood sexual abuse, poly-drug use and partner violence; and poly-drug use was independently associated with depression and partner violence. These variables were also positively associated with HIV risk. In a retrospective cohort over an 11 year period, 2379 HIV positive patients receiving medical care were examined for factors associated with increased mortality (DeLorenze, Weisner, Tsai, Satre, & Quesenberry, 2011). Not surprisingly, mortality risk was significantly higher in those with substance use problems (alcohol dependence/abuse and/or illicit drug use) than those without. The studies by Stall et al. (2003) and DeLorenze et al. (2011) suggest that not only are psychosocial problems such as depression and substance use related to HIV risk, substance use is also related to increased mortality in those living with the HIV/AIDS.

Equal proportions of HIV infected and uninfected MSM were found to have depressive symptoms in a South Australian cohort of MSM attending a community medical practice (Rogers, et al., 2003). Mao et al. (2009) assessed major depression in HIV positive and negative MSM attending primary care services in the Australian cities of Sydney and Adelaide. These authors identified major depression in 31% of HIV

positive and 20% of HIV negative MSM, with depression being independently associated with being younger, lower income, recent life stress, passive coping strategies, less social support, sexual problems and less gay community involvement. Interestingly, HIV status was not independently associated with major depression, indicating that psychosocial issues are related to sexual orientation rather than HIV status (Mao, et al., 2009). In the Australian State of Victoria, mental health and psychosocial problems in HIV positive patients have also been linked to increased hospitalisation (Mijch, et al., 2006) and decreased adherence to treatment (Gibbie, Hay, Hutchison, & Mijch, 2007).

Despite great effort and targeted health promotion campaigns, MSM continue to be at greatest risk for HIV infection in Australia. In Victoria, HIV notifications have increased over the past 10 years, with 262 individuals being diagnosed with HIV during 2009 compared with 132 notifications during 1999 (DHS, 2010). These increases in HIV and other sexually transmitted infections (STI) need to be understood within the context of the psychological well-being of MSM in order to ensure a multidimensional approach to HIV prevention and care. HIV prevention efforts have largely focused on sexual risk taking behaviours in isolation of psychosocial factors. There is now sufficient empirical evidence to examine risk taking in the context of psychological health which may contribute to HIV risk and HIV care. It is important for mental health issues, beyond depression and frequency of substance use, to be further understood in this group. The increasing incidence of HIV infection in Victoria indicates the urgent need to determine the factors that are contributing to this increase, given that knowledge of HIV transmission and therefore the required safe behavioural practices are now well established.

The main aim of this study was to describe the mental health status of MSM, and to explore relationships between substance use and psychological distress in MSM accessing a sexual health and ID clinic in Melbourne, Australia. A further aim was to determine the impact of HIV status on the mental health of these men. It was hypothesised that MSM accessing a sexual health and ID clinic would have elevated levels of psychological distress, including mood disorder and suicidality, and that these factors would be correlated with substance use. It was also expected that being HIV positive, of younger age, and having substance use issues would be predictors of psychological distress.

Method

This study was a cross-sectional design, with a convenience sample of MSM accessing a sexual health and ID clinic for routine care. Ethical approval to conduct this study was provided by relevant institutional committees. Inclusion criteria were MSM, age 18 years and over, with the ability to read and write in English.

Participants

Participants were 250 MSM accessing a sexual health clinic ($n = 200$) and an infectious diseases outpatient clinic ($n = 50$) in Melbourne Australia, between October 2008 and January 2009. The response rate was high (88% of the 284 participants invited to participate provided consent). The mean age was 33 ($SD = 11.8$, *minimum* = 18, *maximum* = 71) years.

The sociodemographic information for the sample is shown in Table 1.

Table 1

Sociodemographic Information for 250 MSM

Sociodemographic Variable		Sociodemographic Variable	
<i>Relationship Status*</i>	% (n)	<i>Birth Country</i>	% (n)
Single	65 (157)	UK	3.3 (8)
Partner	30.8 (74)	China	2.5 (6)
		Malaysia	2.5 (6)
<i>Employment</i>		India	2.5 (6)
Full-time	46.7 (112)		
Part-time	16.3 (39)	<i>Education</i>	
Unemployed	10.0 (24)	Yr 7-9	1.3 (3)
Student	14.6 (35)	Yr 10-11	12.1 (29)
Pension	10.0 (24)	Yr 12	22.9 (55)
		Tertiary/Tafe	17.1 (41)
<i>Birth Country</i>		Undergraduate	35.8 (86)
Australia	67.1 (161)	Post-graduate	10.0 (24)
New Zealand	3.8 (9)		

Note. *Married to a women 2.5% (n = 6), Divorced 0.8% (n = 2).

It can be ascertained from the information presented in Table 1 that participants were predominantly single, employed full or part-time, well educated and Australian born.

Measures

Sociodemographics. Sociodemographic variables measured were: age, country of birth, education level attained and relationship status. Factors relevant to sexual risk were also obtained. These were self-report of HIV status, HIV/STI testing history and past positive STI tests.

Personality Assessment Screener (PAS) (Morey, 1997). A 22-item screening questionnaire, selected due to its ability to assess severity of psychological symptoms in a variety of clinical domains as well as assessing general functioning consistent with the Diagnostic and Statistical Manual of Mental Disorders (DSM-IV; American Psychiatric Association, 1994). The 10 PAS domains are *Negative Affect* - unhappiness and apprehension; *Acting Out* - impulsivity, sensation seeking; *Health Problems* - somatic complaints/health concerns; *Psychotic Features* - persecutory thinking; *Social Withdrawal* - social detachment; *Hostile Control* - needs for control; *Suicidal Thinking* - thoughts of death or suicide; *Anger Control* - anger management difficulties; *Alienation* - failures of supportive relationships; and *Alcohol Problem* - alcohol use/abuse (Morey, 1997). Scores are transformed to a probability estimate of the likelihood of being in one of four categories (Normal, Mild, Moderate, Marked) for a clinical diagnosis based on the DSM-IV if they were to complete a full psychological assessment. Scores in the *Marked* range indicate a 75% to 99% chance that the individual is experiencing some type of clinically significant psychological problem. The reliability of the PAS in the clinical standardisation sample was $r = .79$ and test-retest reliability was $r = .89$ (Morey, 1997). The Cronbach's alpha coefficient in this study was moderate ($r = .69$).

Substance use. Alcohol use frequency was measured by two questions assessing global use (daily, weekly, monthly frequency) as well as frequency of binge drinking episodes (≥ 6 standard drinks in one sitting). Drug use frequency was measured for the following substances: marijuana, amyl/poppers, ecstasy, speed, crystal/ice, cocaine and heroin. For each drug, participants were given the following forced choice options and were coded based on the following responses: 5 = More than weekly, 4 = Weekly, Less than weekly, 3 = Not in the last six months, 2 = Not in the last 12 months and 0 = Never. Due to high levels of poly-drug use in participants who reported substance use, a variable Recreational Drug Use was created by summing scores for marijuana, speed, ecstasy, crystal and cocaine as Principle Components Analysis revealed the presence of two components with eigenvalues exceeding 1 and explaining 53.2% and 14.1% of the variance respectively. The two items (amyl/poppers and heroin) that comprised component two were factor complex, since they also loaded on component one. An examination of the Scree Plot revealed a clear elbow after component one, further supporting a single component solution. In this study, the Cronbach alpha coefficient for Recreational Drug Use was high ($r = .88$).

Procedure

MSM attending a large metropolitan sexual health centre and hospital ID outpatient clinic were informed of the study by the clinic/triage nurses on arrival, and invited to take part. Those who agreed to participate were introduced to the researcher who explained the study, obtained participants' informed consent, and provided participants' with the research questionnaires. Participants' were instructed to complete

the questionnaires as accurately as possible, that the material was extremely personal, and that all responses were confidential. To encourage candid answers, participants returned completed questionnaires to a confidential box located in the clinic.

Statistical Analyses

The Statistical Package for the Social Sciences (SPSS) Version 17.0 (SPSS, 2008) was used for data analysis. Eleven cases with greater than 10% missing data were deleted from the analysis, leaving a final sample of $N = 239$. Those participants with unknown HIV status ($n = 21$) were excluded from the multivariate analysis. The distribution of scores was examined to test for the impact of outliers. All mean values were very similar, and therefore outliers ($n = 7$) were not removed from the data file.

Simple descriptive summary statistics (means and standard deviations for continuous variables and frequencies/percentages for categorical variables) were used to describe the sample. Pearson's product moment correlation coefficients (Pearson's r) and Spearman's Rank Order Correlation coefficients were used to examine relationships between PAS total score, domain scores and substance use. Independent samples t-tests were used to examine group differences on PAS scores between HIV positive and negative MSM. Standard regression analysis was used to examine relationships between the dependent continuous variable (PAS total score measuring psychological distress) and the hypothesised independent variables of interest (age, education, HIV status and Recreational Drug and alcohol use). B and standardized beta coefficients (β) are reported. P-values were set at 0.05.

Results

Participant results on HIV status and sexual health testing history are presented in Table 2.

Table 2
HIV and STI testing history for 239 MSM

<i>Self reported HIV Status</i>	<i>% (n)</i>
HIV Positive	21.7 (52)
HIV Negative	69.2 (16)
Unknown	8.8 (21)
<i>Self-reported STI Testing</i>	<i>% (n)</i>
Past STI test	
Yes	85.0 (204)
No	15.0 (36)
Past STI Positive	
Yes	40.6 (97)

It can be seen from participant results presented in Table 2 that most (69.2%) of the participants reported being HIV negative. The majority (85%) also reported previously having an STI test with 40.6% reporting a past positive result. Participant's self-reported use of alcohol and illicit drugs are presented in Table 3.

Table 3

Self-Reported Frequency of Illicit Drug and Alcohol Use

<i>Drug</i>	Frequencies % (<i>n</i>)					
	Never	Not in 12 months	Not in 6 months	Less than weekly	Weekly	More than weekly
Marijuana	30.4 (73)	20 (48)	8.3 (20)	17.5 (42)	3.8 (9)	7.5 (18)
Amyl/poppers	32.5 (78)	18.3 (44)	6.2 (15)	22.9 (55)	3.3 (8)	1.7 (4)
Ecstasy	42.5 (102)	14.6 (35)	10.0 (24)	20.0 (48)	1.2 (3)	0.4 (1)
Speed	47.1 (113)	17.1 (41)	5.4 (13)	13.8 (33)	0.8 (2)	0.4 (1)
Crystal/Ice	60.4 (145)	12.9 (31)	3.3 (8)	7.1 (17)	0.4 (1)	
Viagra	61.3 (147)	11.3 (27)	2.1 (5)	6.7 (16)	0.8 (2)	
Cocaine	53.3 (128)	17.5 (42)	4.2 (10)	10.0 (24)		
Heroin	74.6 (179)	5.0 (12)	1.7 (4)			0.4 (1)
<i>Alcohol Use</i>	Less than monthly	Monthly	Weekly	Daily/ almost daily		
Binge Drinking*	27.1 (65)	27.9 (67)	21.3 (51)	21.3 (51)		

Note. *Binge drinking - ≥ 6 standard drinks in one sitting.

It can be seen in Table 3 that overall, self-reported drug use was low. The majority of participants reported binge drinking at least monthly, with 42.6% binge drinking at least weekly. Participants consumed on average 1.2 standard drinks each day. The most frequently used drug was marijuana followed by amyl/poppers and ecstasy. Heroin was the least used drug.

Psychological Functioning

The proportion of MSM scoring in the Marked range of the PAS domain and total scores are presented in Figure 1. Mean PAS total scores (indicating psychological distress) were significantly higher ($M = 21.56$, $SD = 7.41$) than test-supplied community sample norms ($M = 16.66$, $SD = 7.40$) $t(218) = 9.7$, $p = .000$.

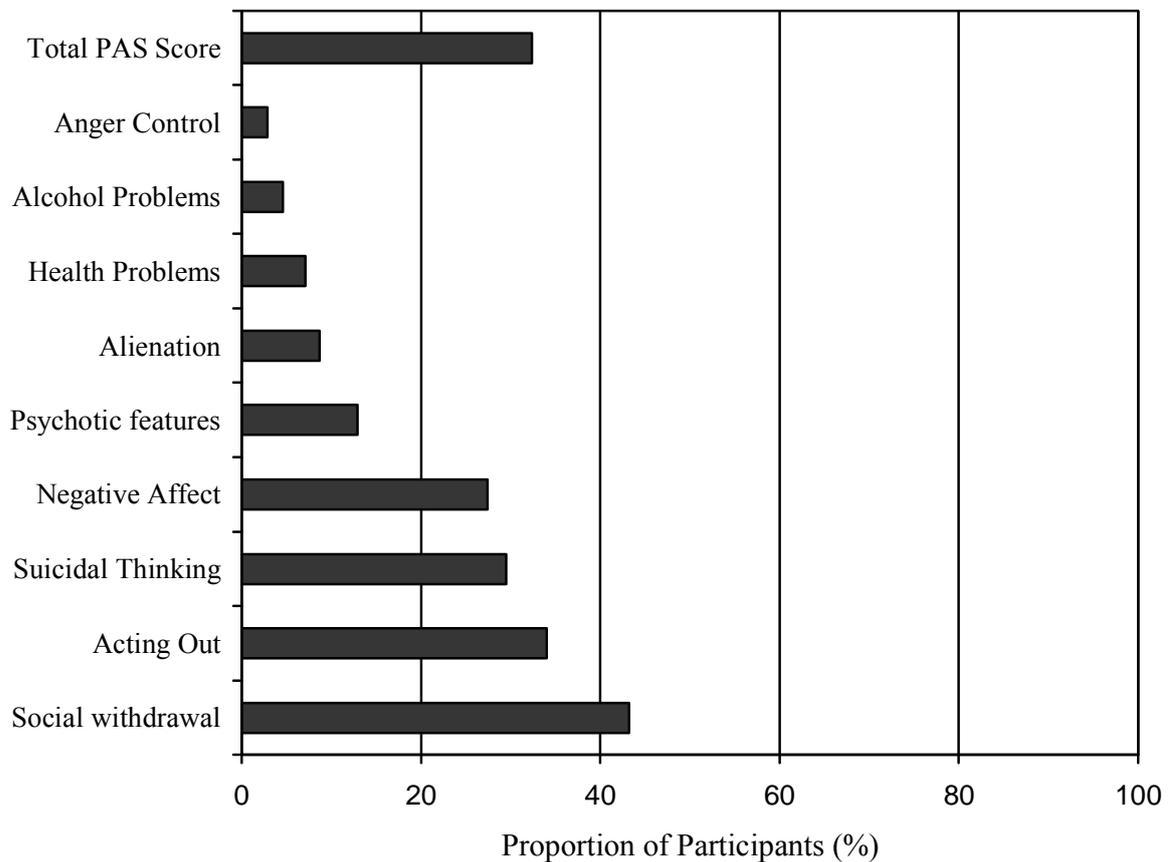


Figure 1. Total PAS and Domain Scores in the Marked Clinically Significant Range on the Personality Assessment Screener in MSM.

As ascertained in Figure 1, approximately one-third (32%) of participants scored in the Marked clinically significant range on the PAS total score. The domains of Social Withdrawal (43%), Acting out (34%), Suicidal Thoughts (29%) and Negative Affect (27%) recorded the highest number of participants falling in the Marked range. The domain Hostile Control has no participants score in the Marked range. The Marked range shows substantially greater potential for emotional and/or behavioural problems than is typical for community adults (standardised population).

Relationships within the PAS

Pearson's correlation was applied to determine the relationship between scores across the PAS, and to determine which domains correlated with the overall total score (psychological distress). These results are presented in Table 4.

Table 4

Correlations of PAS Domain Scores and Total PAS Scores Amongst 250 MSM

	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.
1. Negative Affect										
2. Acting Out	.15*									
3. Health Problems	.22**	.09								
4. Psychotic Features	.10	.22**	.14*							
5. Social Withdrawal	.10	-.21**	.09	-.09						
6. Hostile Control	.04	.08	-.09	-.02	-.04					
7. Suicidal Thinking	.40**	.19**	.22**	.09	.10	.08				
8. Alienation	.16*	-.05	.12	.19**	.24**	.07	.10			
9. Alcohol Problem	.11	.24**	.08	.07	-.07	-.01	.16*	-.03		
10. Anger Control	.12	.03	.05	.06	.05	.14*	.11	.14*	.00	
PAS Total Score	.53**	.50**	.39**	.41**	.13	.14*	.53**	.30**	.30**	.34**

Note. Pearson's Correlation coefficients; * $p < 0.05$ ** $p < 0.001$

It can be seen in Table 4 that the domains of Negative Affect and Suicidal Thinking showed the highest correlation with PAS total score (psychological distress),

followed by Acting Out. Social Withdrawal correlated the least with PAS total score (psychological distress).

For each of the 10 PAS domains, the strongest correlations can be seen for the following: Negative Affect correlated with Suicidal Thinking and Health Problems; Acting Out correlated with Alcohol Problems, Psychotic Features and negatively with Social Withdrawal; Health Problems correlated with PAS total score (psychological distress) and Suicidal Thinking; Psychotic Features correlated with PAS total score (psychological distress) and Alienation; Social Withdrawal correlated with Alienation; Alcohol Problem and Anger Control correlated with PAS total score (psychological distress).

Relationships with PAS Total Score and Substance Use

To examine the relationships between psychological variables and substance use, Spearman's Rank Order correlations for the PAS total and domain scores and substance use were determined. Significant correlations are presented in Table 5.

Table 5

Significant Spearman's Rank Order Correlations of PAS Total and Domain Scores and Substance Use

PAS	Marijuana	Amyl	Ecstasy	Speed	Crystal /Meth	Cocaine
PAS Total Score	.33**	.18*	.26**	.35**	.30**	.25**
Acting Out	.62**	.38**	.58**	.58**	.46**	.53**
Psychotic Features			.17*		.16*	
Social Withdrawal	-.22**		-.28**	-.19**	-.16*	-.16*
Suicidal Thinking	.21**			.19**		
Alienation			-.19**	-.18*		
Alcohol Problem	.26**	.19**	.31**	.35**	.28**	.29**

Note. * $p < 0.05$ ** $p < 0.001$

It can be seen in Table 5 that the PAS domain Acting Out positively correlated the strongest with all of the substances measured. PAS total score (psychological distress) and the domain Alcohol Problem positively correlated with all drugs measured. The domains of Negative Affect, Health Problems, Hostile Control and Anger Control did not significantly correlate with any of the substances measured. Ecstasy and Speed (amphetamine) correlated with the highest number of PAS domains, followed by Marijuana use.

Relationship between PAS Domain Scores and HIV Status

Independent t-tests revealed significant differences between HIV positive and negative participants on several PAS domain scores. HIV positive participants scored significantly higher on domains of Social Withdrawal ($M = 4.5, SD = 0.8$) and Health Problems ($M = 3.6, SD = 1.1$) compared with HIV negative participants ($M = 4.0, SD = 1.0$), $t(207) = -3.05, p = .003$, ($M = 2.9, SD = 0.7$), $t(206) = -4.88, p = .000$ respectively. This difference was not evident on the PAS total score, $t(195) = -.39, p = .69$. There were significant differences in the frequency of binge drinking with this ranging from between 'Monthly' and 'Less than monthly' amongst HIV negative participants, whilst HIV positive participants had reported binge drinking of between 'Less than monthly' and 'Never' MSM, $t(212) = 3.18, p = .001$.

Factors Contributing to PAS Total Score (Psychological Distress)

In order to examine predictors of PAS total score, a standard regression analysis was conducted, and included hypothesised contributory factors (HIV status, alcohol and Recreational Drug use) as well as previously implicated sociodemographic variables (age, education, employment, relationship status) (see Table 6). Using the enter method, a significant model emerged, explaining 20.5% of the variance ($R^2 = .205, F_{8,197}=6.35, p < .000$).

Table 6

The Association Between PAS Total Score and Sociodemographics, HIV Status and Recreational Drug and Alcohol Use

Variables	B	SE	B	t	p-value
Age	0.05	.04	.086	1.16	.24
Education	-0.63	.35	-.12	-1.78	.77
Relationship Status	-0.98	.55	-.12	-1.77	.07
Employment	1.06	.35	.20	3.02	.003**
HIV Status	-1.09	.77	-.09	-1.41	.15
Recreational Drug Use	0.58	.11	.35	5.01	<.001**
Daily Alcohol	-0.42	.27	-.11	-1.52	.12
Binge Drinking	0.19	.52	.03	0.37	.71

As shown in Table 6, two of the independent variables, employment and Recreational Drug use, contributed significantly to the prediction of PAS total scores (psychological distress). Twenty percent of the variance in PAS total scores (psychological distress) was predicted by this model. HIV status and alcohol use (daily use and binge drinking) were not significantly associated with PAS total scores (psychological distress).

Discussion

Consistent with predictions, the results of this study indicate that MSM accessing primary care services have high levels of psychological distress compared with normative data. High levels of Social Withdrawal, Acting Out (impulsivity), Suicidal Thinking and Negative Affect were also identified in this group. As predicted, psychological distress

was associated with drug use, but contrary to predictions, was not associated with age or HIV status.

Overall psychological distress scores (PAS total scores), which indicate difficulties with social and emotional functioning, were strongly correlated with symptoms of Negative Affect (mood), Suicidal Thinking and Acting out (impulsivity). The highest correlations were seen between Negative Affect and Suicidal Thinking. These findings are consistent with past research which has identified high levels of depression and suicidality in MSM (Mao, et al., 2009; Rogers, et al., 2003; Sherr, et al., 2008). It appears that the high level of psychological distress observed in this study is largely due to low mood and suicidal ideation. Table 5 shows consistently high correlations on the Acting Out and Alcohol Problem domains across all drug use categories. Acting Out (i.e., impulsivity) is commonly understood as a mechanism linked to substance abuse (Semple, Zians, Grant & Patterson, 2006), which is also consistent with the findings of this study, as Acting Out was strongly positively correlated with all of the substances measured. Suicidal Thinking was significantly correlated with the use of marijuana and amphetamines. A possible explanation for these relationships is the use of illicit drugs to lift negative mood states. The opposite relationship may also be equally plausible. That is, that drug use leads to negative mood states and suicidal ideation, such as the 'coming down' effect of amphetamine use. The level of suicidal ideation identified in this group is similar to that reported by Sherr et al's (2008) study of HIV positive clients accessing HIV treatment. Social Withdrawal was negatively correlated with drug use, which may be due to any number of factors, such as inclusion in the gay nightclub/party scene however this cannot be ascertained from this study and requires

further research. Ecstasy and Speed was also negatively correlated with alienation, although this was relatively weak.

Multivariate analysis revealed that psychological distress scores, as indicated by the PAS total score, were related to employment status and Recreational Drug Use when accounting for age, education, relationship and HIV status and alcohol use. These are commonly overlapping factors whereby an individual with high psychological distress may be more likely to be unemployed and using substances (Fryers, Melzer, Jenkins, & Brugha, 2005). This relationship may indicate that those with serious mental health symptoms are unable to work, and use substances to cope with negative life stress. Another alternative explanation is that unemployment or substance use leads to high psychological distress. The directions of these relationships cannot be accurately ascertained due to the cross-sectional design of this study. Nevertheless, the association between employment, drug use and psychological distress found in this study warrants further investigation. Providing employment opportunities and substance use interventions for this group may constitute a viable health promotion strategy to improve their psychological well-being.

The non-significant relationship between HIV status and psychological distress, both when comparing HIV positive and negative MSM on psychological distress scores and in the multivariate analysis, is similar to past research (Mao, et al., 2009; Rogers, et al., 2003). It should be noted however, that the low number of HIV positive participants in this study limits the ability of these results to rule out an association between HIV status and psychological distress. However, these results do suggest that compromised psychological well-being is not necessarily due to HIV status. This indicates the need for

clinical services to address the mental health issues in the MSM population, regardless of their HIV status.

In the current study, HIV positive men scored significantly higher on the PAS domains of Social Withdrawal and Health Problems relative to HIV negative men, but in contrast to expectations, not on overall psychological distress. It is easily conceivable that men with HIV would have significantly greater somatic complaints and health concerns (PAS domain Health Problems) than HIV negative men, due to the fact they are living with a chronic disease. The differences between HIV positive and negative participants on Social Withdrawal scores suggest HIV positive men may have higher levels of social detachment. It is important to recognise that both groups had a mean score in the marked range on social withdrawal, suggesting the high number of participants scoring in the marked range are not inflated by the scores of the HIV positive participants in this study.

Interestingly, Social Withdrawal did not correlate with overall psychological distress, however it did correlate with Alienation and also had the highest proportion of participants in the marked range, suggesting that large numbers of these participants have symptoms of social detachment and discomfort in close relationships (Morey, 1997). Morey describes high scores on the social withdrawal scale may be driven by a number of factors such as apathy (due to depression), marked shyness or social anxiety, trauma-related alienation (i.e., post traumatic stress disorder), autistic withdrawal (i.e., schizophrenia), distrust (i.e., paranoia), or unstable relationships (i.e., borderline personality) (Morey, 1997). These findings warrant further research into the etiology of these symptoms.

Limitations of this study which need to be considered include the use of cross-sectional design, and low numbers of HIV positive participants. Also, the use of a screening questionnaire could be enhanced by including psychological assessment interviews in future research. Importantly, this study describes psychological difficulties, beyond depression. It is well recognised that MSM and other HIV risk groups have a higher prevalence of mental health problems relative to the general population, which this study also confirms. It is important to further investigate these problems in order to accurately ascertain the mental health care needs of this group.

This study found disturbingly high levels of psychological distress in a group of MSM accessing primary health services, with approximately one third of the group scoring in the clinically significant range on the PAS total score predictive of serious psychological disorder. The findings are important since the psychological well-being and difficulties faced by MSM need to be considered if sexual risk behaviours are to be fully understood. This subgroup of MSM require access to psychological and/or specialist mental health services. Sexual health services offer an important contact point for MSM, who may otherwise not contact mental health services for their psychological difficulties. Health professionals should consider depression, suicidality, social withdrawal, impulsivity and substance use assessments in the overall health plan of their MSM clients.

The broader social interpretations of this research suggest that MSM continue to face inequalities in our community, which may negatively impact on their psychological health. The importance of gay community involvement is indicated as a potential protective factor. Although advancements have been made, social inequalities based on

sexual orientation remain in Australia. The most overt example of this is the fact that homosexuals are not able to legally marry. Although discrimination based on sexual orientation is illegal, the underlying message from society is of mixed acceptance.

As these men were recruited from primary care clinics, this offers an opportunity to engage with their mental health needs when they attend for routine care. The use of psychological screening questionnaires in addition to sexual health assessment of MSM attending sexual health/ID clinics may provide valuable information for improving the psychological well-being of this client group, regardless of HIV status.

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CHAPTER SIX: RISK FACTORS FOR HIGH RISK SEXUAL BEHAVIOUR IN MSM: THE ROLE OF SENSATION SEEKING, PARTNER NUMBERS AND NEGOTIATION SKILLS

6.0 Preamble to Phase One Paper Two

In the context of increasing incidence of HIV infection in MSM in Victoria, it is evident that understanding the mental health status of this group will contribute to the understanding of sexual health and behaviour. The findings presented in paper one indicated that a third of the MSM attending primary health services display clinically significant psychological distress with disturbingly high levels of mood disturbance and suicidal thinking. As outlined in Chapter Two, it is also necessary to understand relationships between psychological variables and sexual risk taking in MSM in order to address their mental health needs, and to tailor HIV/STI health promotion interventions for the specific needs of this group. Much of the past research has focused on behavioural variables related to risk taking (i.e., the number of sexual intercourse events with/without condoms), biological-related variables (i.e., HIV viral load, CD4 counts, co-occurring STI) and social variables (i.e., the number of sexual partners, partner HIV status, sex with casual versus primary partners). The aim of the study described in this chapter is to further this knowledge by exploring the impact of psychological health and personality traits on sexual risk taking behaviour.

The additional analyses of interest not reported in this manuscript can be found in Appendix G.

6.1 Introduction to the Second Paper

This chapter constitutes an article submitted to the journal *AIDS Care* for publication. The purpose of this article was to examine the psychological predictors of sexual risk behaviour of a sample of MSM attending a large sexual health and infectious diseases clinic for sexual health testing and HIV care.

6.2 Risk Factors for High Risk Sexual Behaviour in Men Who Have Sex with Men: The Role of Sensation Seeking, Partner Numbers and Negotiation Skills.

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Abstract

Background. Men who have sex with men (MSM) continue to be the highest risk group for Human Immunodeficiency Virus (HIV) infection in Australia. There is some evidence that impaired behavioural and psychological functioning such as substance use, mood, self-efficacy, personality traits such as sensation seeking and limited contemplation of risk behaviour are related to sexual risk behaviour (SRB). This study examined predictors of SRB in a sample of Victorian MSM accessing HIV and sexual health services.

Methods. A cross-sectional convenience sample of 250 MSM attending for routine care (HIV positive $n = 52$, HIV negative $n = 198$) were recruited. Participants completed self-report questionnaires including sociodemographics, substance use, impulsivity, compulsivity, sexual sensation seeking scale (SSSS) and the Personality Assessment Screener (PAS). High SRB was defined as unprotected anal intercourse (UAI) with a casual partner or a serodiscordant/unknown status regular partner in the previous three months.

Results. Anal intercourse was reported in 81% of participants, with 39% meeting the criteria for high SRB. High SRB had greater drug use ($t(237) = -2.5, p = .01$), greater SSSS scores ($t(237) = -3.44, p = .001$), lower stage of change scores ($t(237) = 2.9, p = .004$), lower self efficacy scores ($t(237) = -3.61, p = .000$), lower use of negotiation skills ($t(237) = -5.56, p = .000$), and lower negative affect (mood) ($t(237) = 2.37, p = .019$).

Multivariate analysis revealed high SRB was independently positively associated with the number of sexual partners and SSSS. Increased mood symptoms, negotiation skills and number of standard drinks per day decreased SRB.

Conclusion. Participants with high SRB had, on average, higher SSSS, lower condom-use self-efficacy and negotiation skills, and were in a lower stage of change relative to those with low SRB. Surprisingly, high SRB had lower negative affect scores than low SRB. These findings suggest that SRB is more likely to occur as part of a number of complex behaviours, indicating the importance of addressing both psychological and behavioural factors in HIV/STI prevention interventions.

Introduction

Despite widespread access to HIV and sexually transmitted infection (STI) testing and treatment and ongoing health promotion strategies, MSM continue to be at greatest risk of infection with HIV in Australia (Guy, 2007). In Victoria, new diagnoses of HIV have increased over the past 10 years, rising from 132 in 1999 to 262 in 2009 (Department of Human Services, 2010). This increased diagnosis of HIV suggests MSM are involved in sexual and/or other risk behaviours that are placing them and other men at risk of HIV/STI transmission. This is consistent with behavioural surveys also reporting increased unprotected anal intercourse (UAI) in Australian MSM, the primary mode for HIV transmission within this group (Frankland, et al., 2008; Hull, et al., 2002).

Predictors of HIV Transmission

Investigations examining the correlates of HIV transmission and sexual risk have led to a large body of evidence on the topic. Good evidence exists for the role of behavioural variables as predictors of HIV/STI transmission (i.e., increasing number of sexual partners and sexual acts) (Koblin, 2006); for the role of biological variables (i.e., increasing HIV viral load, concurrent STIs, uncircumcised) (CDC, 2003; Hoy, et al., 2009); and sociodemographic variables (i.e., age, community involvement, ethnicity) (Mao, et al., 2009). Substance use is also significantly associated with risky sexual behaviour (Clutterbuck, et al., 2001; Dudley, et al., 2004; Halkitis, et al., 2005; Semple, Zians, Grant, & Patterson, 2006; Stueve, et al., 2002). Stueve et al. (2002) conducted a multi-site survey of over 3,000 urban young MSM in the U.S.A., and reported that nearly one third of their sample were intoxicated the last time they had sex with a casual partner, and men who were intoxicated by alcohol or illicit drugs were over 60% more likely to

have engaged in UAI. Furthermore, substance use was associated with other risk factors, including having multiple sex partners and trading sex for drugs and/or money. Dudley et al. (2004) suggest these findings are consistent with the assumption that a specific risk behaviour is more likely to occur when it is part of a “constellation” of problem behaviours.

There is some evidence for the salience of psychological constructs in understanding sexual risk behaviour. For example, the Transtheoretical Model of behaviour change (also known as the Stages of Change Model) assumes that change is a dynamic process involving both losses and gains which generate ambivalence about change within the individual (Prochaska & DiClemente, 1983). Lack of motivation to change can be viewed as a perceptual problem, where the individual sees no need to change a specific behaviour, in this case UAI, despite the fact that others perceive a need for such change. The Stages of Change identified by Prochaska and DiClemente are *Pre-contemplation* – defined as not thinking about change, *Contemplation* – defined as thinking about change, *Preparation* – defined as preparing for change, *Action* – defined as making a change, and *Maintenance* – defined as maintaining behaviour change (Prochaska & DiClemente, 1983).

Condom-use self-efficacy, that is, the self-perceived confidence one has in performing this specific behaviour or in making a change, has been shown to predict HIV risk behaviours (Reid, 2007; Semple, Patterson, & Grant, 2000). The personality traits of impulsivity, sensation seeking and compulsivity have also been shown to be associated with sexual risk taking (Benotsch, et al., 1999; Benotsch, et al., 2001; Kalichman, et al., 2003; Semple, et al., 2000; Semple, et al., 2006). Cooper, Agocha and Sheldon (2000)

suggest impulsivity, defined as the tendency to act without thinking and without regard for the negative consequences of an action, and sensation seeking may serve as coping strategies for the regulation of negative affect. For instance, an individual may use alcohol, illicit drugs or engage in risky sex (i.e., the impulsive/sensation seeking behaviours) to lift their dysphoric mood state (Cooper, et al., 2000).

Findings regarding the association between negative mood and risky sexual behaviour however, have been mixed (Beck, et al., 2003; Parsons, et al., 2003; Rogers, et al., 2003). In a review of empirical studies of the social, psychological and medical findings related to sexual risk behaviour in people living with HIV, Crepaz and Marks (2002) examined the association between negative affect (depression, anxiety and emotional distress) and sexual risk taking in 34 cohorts of MSM, substance users and other heterogeneous groups, and found it did not support an association between negative affect and sexual risk. Conversely, in a South Australian cohort of MSM attending a community medical practice, equal proportions of HIV infected and uninfected MSM were found to have depressive symptoms and that MSM with dysthymia were almost twice as likely to engage in risky sexual behaviour than MSM without this diagnosis, regardless of their HIV status (Rogers, et al., 2003). These contrasting findings indicate the need to further investigate the impact of mood on sexual risk behaviours.

Social researchers have examined the relationships between HIV risk behaviours and constructs such as knowledge and attitudes regarding HIV risk (Stolte, et al., 2004), as well as social skills around condom negotiation (Beck, et al., 2003; Cerwonka, et al., 2000; Semple, et al., 2000), assumptions of sexual partner's serostatus (Parsons, et al., 2006; Zablotska, et al., 2009) and believing sexual partners desire unprotected sex

(Davidovich, De Wit, & Stroebe, 2006). Findings have suggested risky sex was associated with having less knowledge about HIV/AIDS and its transmission, believing that sex with a condom decreases pleasure, and having difficulties communicating to partners concerns about safer sex (Gibbie, et al., 2008; Parsons, et al., 2006).

HIV prevention interventions in Australia achieved great success in containing the spread of the virus in the early years of the pandemic. The recent increases of HIV and also other STIs indicate the complexity now faced by health promotion strategists in reversing the current and surprising trend of increasing infections. Understanding the predictors of sexual risk taking behaviours is important for the design and implementation of effective evidence based interventions for this high risk group.

The aim of this study was to examine the influence of specific personality factors not often investigated (i.e., sensation seeking, impulsivity, compulsivity) and psychological constructs (i.e., self-efficacy, negotiation ability, mood, stage of change) on sexual health behaviours to determine the relationships between psychological factors and HIV sexual risk behaviour. It was hypothesised that increased sensation seeking, impulsivity, compulsivity and negative mood would be positively associated with increased sexual risk behaviours, as well as increased substance use and sexual partners. It was also hypothesised that sexual risk taking would be associated with pre-contemplation and contemplation Stage of Change for sexual risk behaviour, lower HIV knowledge and less self-perceived negotiation ability.

Method

Participants

Participants were 250 MSM accessing a large metropolitan sexual health clinic and a hospital infectious diseases outpatient clinic in Melbourne Australia, between October 2008 and January 2009. The response rate was high (88% of 284 invited to participate). The sample was all male, with a mean age of 33 ($SD = 11.8$, min = 18, max = 71) years. The majority of men were single (65%), with 46% tertiary educated and approximately two-thirds (67%) were Australian born. Almost half (47%) were working full-time, with 16% working part-time and 14% identifying as students. Inclusion criteria were MSM, age 18 years and over, who were able to read and write in English.

Measures

Sociodemographic items and sexual health medical history. Sociodemographic variables measured were: age, country of birth, highest education level attained and relationship status. Self-report past sexual health variables included HIV status, HIV/STI testing history and past positive STI tests.

Sexual behaviour. The dependent variable sexual behaviour was determined via self-report for the previous three months at recruitment. Participants were also questioned on their most recent sexual partner which acted as a memory anchor to minimise memory recall bias (Dudley, et al., 2004). These timeframes were included in this study to allow for comparison with past research (i.e., Benotsch, et al., 2001; Dudley, et al., 2004; Fisher, et al., 2006). The total number of anal sex partners, including the number of regular and casual partners, as well as the number of protected and unprotected anal sex

events was determined. Participants were also asked about the HIV status for their partner(s).

High sexual risk behaviour. High sexual risk behaviour was defined as UAI with a casual partner and/or UAI with a serodiscordant or unknown HIV status regular partner over the past three months, well recognised as the riskiest behaviours for HIV/STI transmission in MSM (Beck, et al., 2003; Frankland, et al., 2008).

Substance use. This study used frequency measures of immediate use (daily/weekly) and longer use (6 months) based on past research (Clutterbuck, et al., 2001). Alcohol use frequency was measured via two self-report questions assessing general use (daily, weekly, monthly frequency) as well as frequency of binge drinking episodes (≥ 6 standard drinks in one sitting) based on the National Health and Medical Research Council (NHMRC) guidelines (2001). Drug use frequency was measured for marijuana, amyl/poppers, ecstasy, speed, crystal/ice, cocaine and heroin. For each drug, participants were given the following forced choice options: More than weekly, Weekly, Less than weekly, Not in the last six months, Not in the last 12 months and Never. A variable Recreational Drug Use was calculated by computing the sum of scores for marijuana, speed, ecstasy, crystal and cocaine. In this study, the Cronbach alpha coefficient for Recreational Drug Use was high ($r = .88$).

Sexual Sensation Seeking Scale (SSSS) (Kalichman & Rompa, 1995). The SSSS is an 11-item measure using a 4-point response format, with responses ranging from 1 (Not at all like me) to 4 (Very much like me). Designed to measure the construct of sensation seeking specifically related to sexual interests and activities, where high scores encompass thrill and adventure seeking, experience seeking, disinhibition and boredom

susceptibility (Zuckerman, 1994). Items were developed based on Zuckerman's (1994) Sensation Seeking scale and were adapted to reflect sexually relevant themes, for example "I like wild 'uninhibited' sexual encounters" and "I enjoy watching x-rated videos" by Kalichman et al. (1994). It has been shown to have good internal consistency of $r = .79$, moderate reliability (Kalichman, et al., 1994; Kalichman & Rompa, 1995) and correlated with a range of sexual practices indicating adequate construct validity (Kalichman & Rompa, 1995). In this study, the Cronbach alpha coefficient was $r = .77$.

The Sexual Compulsivity Scale (SCS) (Kalichman & Rompa, 1995). This is a 10-item scale developed to assess tendencies toward sexual preoccupation and obsession, with high internal consistency with alpha coefficients ranging between $r = .85$ and $r = .91$ (Kalichman & Rompa, 1995). A 4-point response format, with responses ranging from 1 (Not at all like me) to 4 (Very much like me), scale items include "My sexual appetite has gotten in the way of my relationships" and "My sexual thoughts and behaviours are causing problems in my life". Reported reliability ranges from $r = .85$ and $r = .91$, and acceptable test-retest reliability, with correlations between $r = .64$ and $r = .95$ (Kalichman, et al., 1994; Kalichman & Rompa, 1995). It has been shown to predict sexual behaviours in MSM, numbers of sexual partners and history of STIs (Benotsch, et al., 1999; Kalichman & Rompa, 1995). In this current study, the Cronbach alpha coefficient was high ($r = .89$).

Impulsivity (Dickman, 1990). Defined as the tendency to act without thinking and without regard for the negative consequences of an action, impulsivity was measured using the 12-item self-report scale developed by Dickman (1990), and has been shown to predict sexual risk behaviours (Semple et al., 2000). A sample item includes "Often I

don't spend enough time thinking over a situation before I act". Participants respond true or false to each statement. Developed over a three phase study and shown to be reliable and internally consistent. The scale has a reported reliability of .87. In this study, the Cronbach alpha coefficient was lower than that reported by Dickman ($r = .61$).

Personality Assessment Screener (PAS) (Morey, 1997). This measure is a 22-item questionnaire to assess general social and psychological functioning and is intended as a screening instrument to evaluate different domains of clinical functioning consistent with the Diagnostic and Statistical Manual of Mental Disorders (DSM-IV; American Psychiatric Association, 2000). The PAS was chosen for its assessment of Negative Affect (mood). The reliability of the PAS in the clinical standardisation sample of 1,246 patients was $r = .79$. Test-retest reliability for a sample of 75 community-based adults tested 24 days apart was found to be $r = .89$ (Morey, 1997). The Cronbach alpha coefficient in the current study was $r = .69$.

Condom-use Self Efficacy (Kalichman, Stein, et al., 2002). Three questions designed to measure self-efficacy relating to condom use, that is the confidence that one has in the ability to perform a specific behaviour under challenging conditions. Items included "It's hard to always use condoms", "Safer sex is hard when you're really turned on to someone", and "It's hard to use condoms if you feel you really know someone". Scores ranged from 1 (disagree strongly) to 4 (agree strongly). The Cronbach's alpha coefficient in the current study was $r = .79$.

Negotiation Skills. Participants were given a list of skills and personal characteristics involved in negotiating safe sex, such as Self worth, Capacity to assert yourself, Knowledge of safe sex practices, Capacity to negotiate safe sex and the

Capacity to say no under pressure. Participants were asked if they had used these skills to increase their safety during sex over the past three months, ranging from 1 (Always) to 4 (Never). Past research has found these three questions to be related to sexual risk taking in MSM attending HIV/STI clinics (Gibbie, et al., 2008).

Transtheoretical Model of Change/Stage of Change (Prochaska & DiClemente, 1983). Participant's Stage of Change (i.e., readiness to change their health risk behaviour) was assessed via the use of a 10-point likert scale, ranging from zero (Never think about safe sex) to 10 (My condom use has changed to 'use always'). The Stages of Change model consists of five stages involved in behaviour change and were scored as follows: 0 to 1 = Pre-contemplation; 2 to 4 = Contemplation; 5 to 6 = Preparation; 7 to 8 = Action; and 9 to 10 = Maintenance.

HIV Knowledge Questionnaire (HIV-KQ-18) (Carey & Schroder, 2002). A validated 18-item questionnaire assessing knowledge of HIV/AIDS was used to explore the relationship between knowledge of HIV/AIDS and sexual risk taking behaviour, and to ensure sexual risk behaviour was not due to a lack of knowledge of HIV/AIDS. The HIV-KQ-18 was developed from a much longer scale and has good to high reliability across samples ($r = .75$ to $.89$), test-retest stability across several intervals ($r = .76$ to $.94$), and strong associations with a much longer, previously validated measure ($r = .93$ to $.97$) (Carey & Schroder, 2002). The Cronbach's alpha coefficient in this study was $r = .63$.

Procedure

Ethical approval to conduct this study was provided by the research and ethics committees of affiliated institutions. MSM attending the recruitment clinics were

informed of the study by the clinic nurse and invited to take part. Those who agreed to participate were introduced to the researcher and, once the study was explained, completed the informed consent procedure and received the self report questionnaires. Participants were instructed to complete the questionnaires as accurately as possible, and although the material was extremely personal, responses were confidential. To encourage accurate answers, participants returned completed questionnaires to a confidential box located in the clinic.

Statistical Analyses

The Statistical Package for the Social Sciences (SPSS) Version 17.0 (SPSS, 2008) was used for data analysis. P-values were set at .05. Incomplete data (>10% missing) was found in 11 participants. These cases were removed leaving a final sample of 239. The distribution of scores was examined to test for the impact of outliers ($n = 7$). All mean values were very similar, and therefore not removed from the data file.

The dependent variable was self-report high sexual risk behaviour (yes/no). The independent variables were: sociodemographics (age, education), Number of sexual partners (total partners, casual and regular), SSSS, SCS, Impulsivity, Self-efficacy, Negotiation Skills, Negative Affect (mood), Recreational Drug Use, HIV knowledge scores and Stage of Change scores. Descriptive statistics were used to describe the sample. Independent t-tests tested for significant group differences between risk groups (i.e., high/low risk) on the independent variables of interest. A logistic regression model was tested to determine which psychosocial, personality and behavioural variables

predicted high sexual risk behaviour in MSM. For the logistic regression, the B (SE) coefficients, odds ratios and confidence intervals are reported.

Results

Sexual Health and Behaviour Characteristics

Characteristics of self-report sexual health testing history and sexual behaviour in the preceding three months are presented in Table 1. Sexual behaviour is also presented for high and low sexual risk groups independently.

Table 1

Self-Report Sexual Health Testing History and Sexual Behaviour in the Previous Three Months for 239 MSM

Variable	Descriptive			
Testing History	% (<i>n</i>)	Range		
Past STI Test	81 (195)			
Past HIV Test	94 (225)			
Past STI Positive	33 (79)	(1-10)		
HIV Positive	21 (52)			
Sexual behaviour in Previous 3 Months				
	% (<i>n</i>)		High Risk	Low Risk
Anal Intercourse	81 (195)		<i>n</i> = 94	<i>n</i> = 145
	<i>M</i> (<i>SD</i>)		<i>M</i> (<i>SD</i>)	<i>M</i> (<i>SD</i>)
Total <i>n</i> of sexual partners	4.7 (6.8)	(0-40)	7.4 (7.4)	3.0 (5.8)*
Number of casual partners	5.0 (6.8)	(0-40)	6.6 (7.6)	2.5 (5.4)*
Number of regular partners	1.0 (1.7)	(0-4)	0.8 (0.9)	0.5 (0.7)*
Sexual Risk Behaviour	% (<i>n</i>)			
Any sexual risk behaviour	39 (94)			

Note. *significant at $p < 0.05$

As indicated in Table 1 almost the entire sample reported having had a HIV test in the past. One third of the sample had a positive test for an STI in the past. The vast majority also reported having had anal intercourse in the preceding three months, with approximately one third having UAI with a casual partner and 39% meeting the criteria for high sexual risk behaviour. Independent *t*-tests revealed significant group differences between those with high sexual risk behaviour and those with low sexual risk behaviour, on number of sexual partners ($t(164.3) = -4.76, p = .000$); number of casual partners ($t(153.7) = -4.4, p = .000$); and number of regular partners ($t(237) = -2.6, p = .008$). There were no significant differences between high risk takers and low-risk takers on age, years of education, HIV status or past STIs.

Psychological Characteristics

Descriptive statistics for substance use, psychological and personality variables for the sample and by sexual risk behaviour groups are reported in Table 2.

Table 2

Substance Use and Psychological Variables for 239 MSM

Variables	Descriptive Statistics		
	Total Sample	Sexual Risk Behaviour	
	<i>N</i> = 239	High <i>n</i> = 94	Low <i>n</i> = 145
Substance Use	<i>M</i> (<i>SD</i>)	<i>M</i> (<i>SD</i>)	<i>M</i> (<i>SD</i>)
Alcohol Frequency			
Daily Standard Drinks	1.2 (1.9)	1.1 (1.4)	1.2 (2.2)
Binge Drinking Freq [#]	1.4 (1.1)	1.5 (1.1)	1.3 (1.1)
Recreational Drug Use ^a	4.3 (4.5)	5.2 (5.2)	3.9 (3.9)*
Psychological Variables			
SSSS	25.6 (5.5)	27.1 (5.2)	24.6 (5.5)*
SCS	17.1 (6.2)	17.8 (6.1)	16.7 (6.3)
Impulsivity	5.5 (2.1)	5.4 (2.0)	5.5 (2.2)
Stage of Change	7.4 (2.5)	6.8 (2.3)	7.8 (2.5)*
Self-efficacy	6.0 (2.2)	5.6 (2.3)	6.7 (2.0)*
Negotiation Skills	1.8 (0.92)	2.2 (0.87)	1.6 (0.8)*
PAS -Negative Affect	3.5 (1.2)	3.3 (1.2)	3.6 (1.1)*
HIV-KQ-18 ^B	14.2 (2.7)	14.0 (2.8)	14.3 (2.6)

Note. * $p < .05$. [#] ≥ 6 standard drinks in one sitting. ^aRecreational Drug use = sum of marijuana, speed, E, cocaine, Crystal meth. Sexual Sensation Seeking Scale (SSSS). Sexual Compulsivity Scale (SCS). Negative Affect scores: 1 = Normal, 2 = Mild, 3 = Moderate, 4 = Marked. ^BCorrect responses out of a total possible score of 18.

It can be seen in Table 2 that participants drank on average 1.2 standard drinks per day. There were significant group differences on a range of variables. High sexual risk takers had higher drug use ($t(237)=-2.5, p = .01$); higher SSSS scores ($t(237)=-3.44, p = .001$); lower stage of change scores ($t(237)=2.9, p = .004$); lower self efficacy scores ($t(237)=-3.61, p = .000$); lower use of negotiation skills ($t(237)=-5.56, p = .000$); and lower negative affect (mood) ($t(237)=2.37, p = .019$). There were no significant group

differences on the SCS ($t(237)=-1.28, p = .201$) and Impulsivity scores ($t(237)=0.377, p = .707$) or on HIV knowledge scores ($t(237)=0.963, p = .336$).

A logistic regression was undertaken to determine which variables independently predicted a likelihood of high sexual risk behaviour over low risk sexual behaviour (see Table 3). The overall multivariate model was significant, $\chi^2(13) = 76.19, p = .000$, and correctly classified 74% of cases overall, with $R^2 = 0.37$, suggesting 37% of the variability was explained by this set of predictor variables.

Table 3

The Association Between Personality and Psychological Variables and Presence/Absence of Self-Report High Sexual Risk Behaviour

Variables	B (SE)	Wald	Odds Ratio	95% Confidence Interval of OR	
				Lower	Upper
Age	-0.01 (0.02)	0.26	0.99	0.96	1.02
Recreational Drug Use	0.04 (0.04)	1.23	1.04	0.97	1.13
Alcohol Day	-0.28 (0.11)	6.21*	0.76	0.61	0.94
Alcohol Binge	0.24 (0.17)	1.81	1.27	0.90	1.78
Total Partners	0.12 (0.03)	14.58**	1.12	1.06	1.19
Negotiation Skills	-0.71 (0.19)	14.72**	2.04	1.42	2.94
SSSS Total	0.08 (0.04)	4.58*	1.08	1.01	1.16
SCS Total	-0.05 (0.03)	2.71	0.95	0.89	1.01
Self Efficacy	0.14 (0.09)	2.63	1.15	0.97	1.37
Impulsivity	-0.07 (0.08)	0.79	0.93	0.79	1.09
Stage of Change	-0.02 (0.07)	0.06	0.98	0.85	1.13
HIV knowledge	-0.04 (0.06)	0.35	0.96	0.85	1.09
PAS NA	-0.33 (0.13)	5.97*	0.72	0.55	0.94

Note. * $p < .05$. ** $p < .000$. Recreational Drug use = sum of marijuana, speed, E, cocaine, Crystal meth.; Sexual Sensation Seeking Scale (SSSS). Sexual Compulsivity Scale (SCS). Personality Assessment Screener Negative Affect scores (PAS NA): 1 = Normal, 2 = Mild, 3 = Moderate, 4 = Marked.

Logistic regression analysis revealed high sexual risk taking was independently positively associated with the number of total partners over the past three months and SSSS. A negative association was found between high sexual risk behaviour and Negative Affect (mood), Negotiation Skills and also daily alcohol intake.

Discussion

The results of this study partially support the prediction that personality and psychological constructs would differentiate men with high risk sexual behaviour from men with low risk sexual behaviour. As predicted, participants with high sexual risk behaviour had, on average, higher sexual sensation seeking, lower condom-use self-efficacy and negotiation skills, and were in a lower stage of change relative to MSM with lower self reported sexual risk behaviour. In contrast to our prediction, high sexual risk takers had lower negative affect scores (less depression) than low-risk takers, and no relationship was found between sexual risk behaviour and the personality traits of sexual compulsivity and impulsivity.

Consistent with previous findings (Clutterbuck, et al., 2001; Dudley, et al., 2004; Halkitis, et al., 2005; Stueve, et al., 2002), the current results also found increased sexual risk behaviour in those with higher numbers of sexual partners (both casual and regular partners) and greater illicit drug use. Interestingly, alcohol use was not significantly different between the two groups as was expected, however daily alcohol use was negatively associated with sexual risk behaviour. That is, increasing daily alcohol use was related to decreased sexual risk behaviour. One possible explanation for this relationship may be that those with increased daily alcohol consumption had a lower

frequency of binge drinking episodes, therefore less risky sexual behaviour. This relationship was not directly tested. In contrast to the prediction that HIV knowledge would also contribute to sexual risk behaviour, no differences were found between those with high sexual risk and those with low sexual risk behaviours on HIV knowledge scores or for age and education.

Consistent with Kalichman et al. (2003), the sexual sensation seeking trait was significantly different between the two groups and independently predicted high risk sexual behaviour in the multivariate analysis. In contrast to previous research, participants in this study with high risk sexual behaviour did not differ on sexual compulsivity and impulsivity measures compared with participants with low sexual risk behaviour (Benotsch, et al., 1999; Benotsch, et al., 2001; Semple, et al., 2006). The results of the current study suggest that for this group of high sexual risk taking MSM, sexual risk behaviour appears to be driven by sensation or thrill-seeking traits rather than by compulsive or impulsive personality drivers. It is worth noting that Semple and colleagues (2006) studied MSM who were methamphetamine users and found strong relationships between impulsivity, sexual risk and methamphetamine use. Participants of the current study had low levels of self-reported methamphetamine use, and are arguably a different population to those in Semple et al.'s cohort, where substance use (methamphetamine) was part of the inclusion criteria. This may explain the differences between findings.

The relationship between depression and sexual risk behaviour was in contrast to that found by Crepez and Marks (2002) but similar to that found by Rogers et al. (2003). Higher negative affect (lower mood/depression) was significantly associated with less

sexual risk behaviours in our study, with sexual risk takers having lower scores (less depression) on the PAS. Interestingly, the mean scores in both groups fell in the 'moderate' range on the test, suggesting that our sample suffered clinically significant symptoms of depression, however those with slightly lower scores (although still in the moderate symptom range) were more likely to engage in sexual risk behaviours than those with slightly higher depression scores. This finding is consistent with Rogers et al. (2003) who found no relationship between major depression and risk taking, but did find that MSM with dysthymia were twice as likely to be sexual risk takers than MSM without the diagnosis. Taken together, these findings suggest that mood is an important factor to consider when examining sexual risk behaviours, however health professionals need to consider that both dysthymia and low mood (and not necessarily major depressive disorder) may contribute to risk taking. These results also support the notion that individuals with dysthymic mood may engage in risk-taking or thrill-seeking behaviours (in this case sexual and drug use behaviours) to lift their negative mood state.

The results of this study are consistent with past research, with sexual risk takers also being shown to have a 'constellation' of risk behaviours, and that sexual risk taking is unlikely to occur in isolation of other potentially problematic behaviours such as substance use and multiple sexual partners, placing these individuals at greatest risk. Men with sexual risk behaviour had more than twice as many sexual partners during the previous three months, most notably a mean of 6.6 casual partners compared with 2.5 in men with low sexual risk behaviour. Also, group differences on substance use revealed sexual risk takers had significantly higher drug use (marijuana, amphetamines, cocaine and ecstasy) but no significant differences in alcohol use. Taken as a whole, the number

of sexual partners and substance use should also be targeted for multifaceted HIV/STI prevention interventions, as sexual risk behaviour is more likely to occur as part of a number of complex behaviours.

Due to the cross-sectional nature of this study casual relations between sexual risk behaviour and these psychological constructs cannot be accurately determined. It has been suggested that dysthymic mood or substance use may lead to unsafe sexual practice, however, the reciprocal relationship is equally plausible. High risk sex may be predictive of low mood and greater substance use. Self-report bias regarding sexual behaviour is a limitation. It is possible that participants may have either under or overestimated their sexual behaviours, particularly given the retrospective nature of the recall (i.e, in the preceding three months). Future prospective studies employing sexual diaries may in some part overcome the bias associated with self-reported sexual behaviour. Since participants were recruited from a sexual health and infectious diseases outpatient clinic, our findings cannot be generalised to those who are not engaged in such health services or are in harder to reach populations. A specific strength of this study was the high response rate of 88%.

In summary, this study provides a profile of MSM who engage in sexual risk behaviour placing themselves and others at risk of HIV/STI transmission. Over a third of the participants were defined as having high sexual risk behaviour and reported having UAI with casual partners or serodiscordant/unknown HIV status regular partners. This indicates a continuation of extreme sexual risk behaviour in our sample of MSM attending primary care, which is concerning and is likely contributing to the continual increase in HIV diagnosis among this group in Victoria, Australia. Participant's Stage of

Change, negotiation skills and condom-use self-efficacy differed between those with high risk sexual behaviour and those with low risk sexual behaviour, with risk takers having lower condom use self-efficacy, negotiation skills and lower stage of change, consistent with past research (Gibbie, et al., 2008; Reid, 2007; Semple, et al., 2000). These findings are important as they identify specific points for targeted intervention strategies to reduce sexual risk behaviour. For example, interventions amenable to the Transtheoretical Model of behaviour change, increasing self-efficacy and negotiation skills around condom use, such as Motivational Interviewing, are clearly indicated for this group.

This study is important in the context of understanding ongoing sexual risk taking behaviour in high risk MSM. This is an vital area of inquiry in the context of increasing HIV diagnosis in Australia. Multifaceted and targeted inventions to support the sexual health of MSM are required as part of a comprehensive health promotion strategy, and these findings have provided specific areas that psychosocial interventions should target, at least in high risk MSM.

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CHAPTER SEVEN: MOTIVATIONAL INTERVIEWING INTERVENTION TO REDUCE SEXUAL RISK BEHAVIOURS IN HIGH RISK MSM

7.0. Preamble to Phase Two Paper Three

The results of paper two indicate an association between sexual sensation seeking, condom-use self-efficacy, negotiation skills and sexual risk behaviours. The finding, reported in paper two, that sexual risk was associated with a lower Stage of Change indicates the potential for behavioural interventions framed around the Transtheoretical Model of behaviour change developed by Prochaska and DiClemente (1986). It is now widely accepted within the health psychology literature that, when aiming to help individuals make enduring changes in health-related behaviours, educational interventions alone are not always effective (Kalichman, Stein, et al., 2002). The outcomes presented in paper two also support this proposition, as no statistically significant differences were found between high sexual risk takers and low sexual risk takers on HIV knowledge scores. This suggests that sexual risk behaviour, and indeed increasing HIV infections in MSM in Melbourne, cannot be explained by a lack of knowledge alone. Clearly, other factors are at play. For example, high-risk sexual behavior has been shown to be prevalent in MSM with a history of repeat testing for HIV (Dilley, et al., 2002) suggesting that amongst this sub-group, attending health care settings for HIV/STI testing is not effective in changing high risk behaviour. Despite receiving health promotion messages regarding the importance of testing for HIV infection, this sub-group appears to be continuing with sexual behaviour that is placing

themselves and others at risk of HIV transmission. Therefore, for this group of high-risk MSM, targeted interventions supporting behaviour change are clearly necessary. The efficacy of interventions that can be delivered in clinical settings are also particularly important to investigate, as approximately two-thirds of MSM report accessing sexual health testing in the past 12 months (Frankland, et al., 2008). This setting offers a potential intervention point for the psychological assessment and potential intervention of high risk MSM when they attend for clinical services.

7.1 Introduction to Paper Three

This chapter constitutes an article submitted to the *Journal of Health Psychology* for publication. The purpose of this article was to examine the effectiveness of a brief MI intervention at reducing sexual risk taking behaviours in high-risk MSM attending a large sexual health and infectious diseases clinic.

7.2 A Brief Motivational Interviewing Intervention Reduces High Sexual Risk Behaviours in MSM: A Randomised Controlled Trial

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Abstract

Background. Despite widespread knowledge of the modes of human immunodeficiency virus (HIV) transmission and consistent promotion of risk reduction methods, there is increasing diagnosis of HIV infection in Victoria, Australia. This study aimed to evaluate the effectiveness of a brief Motivational Interviewing (MI) intervention in reducing unprotected anal intercourse (UAI) and number of sexual partners in high-risk men who have sex with men (MSM) at risk of HIV/STI transmission.

Methods. MSM attending a sexual health and infectious diseases clinic were randomised to receive a two-session MI intervention ($n = 20$) or a standard care control group ($n = 21$) and were assessed by independent assessors for self-report UAI and number of sexual partners at one and four-months post-test follow-up.

Results. Both the MI intervention and control group showed reduced levels of high risk sexual behaviour at one- and four-months (MI 15% and 5% with sexual risk behaviour respectively, controls 38% and 33% with sexual risk behaviour respectively). The reduction in UAI in the intervention group was not significantly different at one-month post-test from controls, however the MI intervention group had significantly greater reductions in UAI at four-months post-test relative to controls ($p = .041$). The MI intervention group also had significantly greater reductions in sexual partners at one month (-5.9 sexual partners, $p = .019$) and four-months (-5.3 sexual partners, $p = .047$) post-test relative to controls (-3, -1 respectively).

Conclusions. A brief MI intervention showed promise in reducing sexual risk behaviours (UAI and number of sexual partners) in MSM at high risk of HIV/STI transmission. MI is a time-limited brief intervention and is deliverable in primary care settings during routine

HIV/STI care. It may therefore have important application as an effective HIV prevention intervention for MSM with high sexual risk behaviour.

Introduction

HIV prevention interventions in Australia have achieved great success in containing the spread of the virus in the early years of the pandemic. However, in the state of Victoria, Australia, new diagnoses of HIV in MSM have seen dramatic increases over the past 10 years (132 in 1999 to 262 in 2009) (Department of Human Services, 2010). This increased incidence of HIV and other sexually transmissible infections (STI) is also consistent with behavioural surveys in this group. For example, a recent study (Frankland, et al., 2008) found 29.4 per cent of the Victorian MSM surveyed had UAI with casual partners in the preceding six months. This disturbing trend of sexual risk and increasing diagnosis of HIV/STIs in MSM is similar to that reported in Europe and the USA (UNAIDS, 2009). Evidence based health prevention strategies delivered in a cost effective manner to populations at greatest risk are an ongoing challenge internationally. Two-thirds of MSM, the population with the highest incidence of HIV infection in Australia, reported accessing HIV/STI testing in the past 12 months (Frankland, et al., 2008). Given the frequency with which MSM are accessing the clinic setting, it potentially offers the opportunity for brief and targeted interventions aimed at reducing sexual risk taking behaviours in this essential group.

MI is an effective counselling style for behaviour change which aims to alter how an individual observes and responds to a problematic behaviour. It requires that the individual have some ambivalence regarding their behaviour and/or interest in discussing it, and that the counsellor work in a client-centred, non-challenging way (Miller & Rollnick, 1991). MI has been shown to be efficacious in changing addiction and health related behaviours such as alcohol and drug use (Carroll, et al., 2001; Graeber, et al.,

2003), smoking (Gray, et al., 2005), adherence to treatment and medication (Swanson, et al., 1999) and diabetes management (West, et al., 2007). Studies have also suggested the applicability of MI to HIV care, such as improving adherence to antiretroviral therapy (Cooperman & Arnsten, 2005; DiIorio, et al., 2003; Parsons, et al., 2005) and reducing substance use among MSM (Morgenstern, et al., 2009) and also amongst HIV positive men and women (Parsons, et al., 2005). More recently, investigations of MI have tested its applicability to HIV prevention in men and women (Fisher, et al., 2006; Kuyper, et al., 2009; Naar-King, et al., 2006) and female sex workers (Patterson, et al., 2008) with promising results.

Fisher et al. (2006) in the USA, undertook a clinician-delivered intervention based on the MI framework in 497 HIV positive men and women. This study, the first to investigate MI in the context of HIV prevention in HIV positive patients, found that a brief, five to 10-minute client-centred intervention delivered during routine clinic visits by treating medical professionals was successful in reducing self-reported sexual risk behaviours. Participants in the MI group reported a reduction in sexual risk behaviours, from a mean of 5.0 unprotected vaginal or anal sexual events to 1.5 events at follow-up. In contrast, a standard-care control group increased risk behaviour over the 18 month study period. These findings suggest that MI can successfully achieve and maintain safe sexual behaviours in HIV infected individuals (Fisher, et al., 2006). Although approximately 12% of this cohort contracted HIV through male to male sexual contact, the study included males and females, heterosexuals and MSM. Therefore, sexual risk behaviours included vaginal intercourse, which is not applicable to the MSM population. Furthermore, only 23% of the Fisher et al., cohort met sexual risk criteria (defined as

unprotected anal, vaginal or oral sex) in the previous three months. The heterogeneous sample included in that study means that the efficacy of MI in MSM is yet to be firmly established. The findings are however promising, and indicate the need for further research to specifically determine the efficacy of MI in a group of high sexual risk taking MSM in an Australian context.

More recently, Kuyper and colleagues (2009) investigated the effectiveness of MI in 448 men and women attending a Dutch STI clinic. Comparing MI to an educational counselling session, the participants receiving MI reported increased self-efficacy, greater condom-use intentions with casual partners and long-term condom use with steady partners. Condom use with casual partners was not significantly different between the two groups. Furthermore, Kuyper et al. (2009) reported that MI was experienced as a more respectful and structured counselling method and was easily implemented into the clinic setting. Similar to Fisher et al. (2006), Kuyper and colleagues included a mixed gender sample, with 60% being male and 46% identifying as homosexual. This study further indicates the potential of MI for use with high risk MSM in an Australian setting.

Past research into MI interventions have included mixed gender samples and consisted of both heterosexuals and MSM. It is necessary to investigate the efficacy of MI in high risk MSM in order to confirm the utility of this brief intervention in reducing sexual risk behaviour among this at-risk group. Recent increases in HIV/STI incidence in Victoria, Australia confirm that prevention efforts must undergo change if they are to be consistently effective.

The aim of this study was to assess the efficacy of a brief, time-limited MI intervention in reducing sexual risk behaviour and number of sexual partners in high

sexual risk-taking MSM. It was hypothesised that participants receiving the MI intervention would report reduced sexual risk behaviour and reduced numbers of sexual partners post-intervention compared with those receiving standard care.

Method

This prospective randomised controlled trial (RCT) compared MI with the standard clinic based care for HIV/STI prevention in MSM attending primary care services in Melbourne, Australia. MSM accessing a large metropolitan sexual health clinic and a hospital infectious diseases outpatient clinic between October 2008 and January 2009 were invited to take part. Ethical approval to conduct this study was provided by affiliated research and ethics committees.

Participants meeting the eligibility criteria who were part of a larger cross-sectional study ($N = 250$), were invited to take part in this MI intervention study. Those who agreed to participate completed the informed consent procedure and were randomised at the clinic level in blocks of 10 (generated using the excel random number function) into either the MI intervention or standard-care control groups. Sexual Risk Behaviour (defined as UAI with casual and/or serodiscordant or unknown HIV status regular partner) and number of sexual partners were measured via self-report at one- and four-month post-MI intervention via telephone interviews. Participants were interviewed via telephone by interviewers who were not involved in delivery of the intervention and were blind to participant group membership. Interviewers read each question of the questionnaire to the participants and recorded their responses.

Inclusion criteria: MSM who were over 18 years of age, able to understand English and had engaged in high risk sexual behaviour over the previous 12 months (i.e.,

UAI with casual partner or UAI with serodiscordant/ unknown HIV status regular partner), and with a capacity to give informed consent were invited to participate.

All participants received the standard care in prevention (i.e., discussion with nurse and/or medical provider, treatment of STI and usual management of HIV) provided by the clinic. The participants randomised to the intervention group participated in a 30-45 minute MI session (face-to-face within two weeks of recruitment) and a 10-15 minute 'booster' telephone call one month later. This intervention was delivered by the first author, a qualified psychologist formally trained in MI.

Experimental Design

MI Intervention

Utilising the MI framework, participants were asked how their sexual risk taking behaviour related to their general life and well-being. Any discrepancies identified by the participant between their sexual health/risk taking and overall life goals and values were explored using MI principles (Miller & Rollnick, 1991). Participants were also instructed to choose a target behaviour most relevant to them and to generate a list of their own personal pros and cons for maintaining or changing their target behaviour using the decisional balance matrix. After they had exhausted their self-generated pros and cons, participants used the Readiness Ruler (Miller & Rollnick, 2003) to explore their ambivalence and confidence towards changing their behaviour. Participants generated their own goal for the following month, and were instructed that this would be explored in the booster session. Similar to Fisher et al. (2006), this goal was written on a behavioural prescription pad and given to the participant, with a carbon copy retained by the therapist. A phone call booster session at one month (10-15 minutes) expanded on the

issues identified during the first face-to-face session and reviewed participant progress toward their goal using MI.

Control Condition

Participants that were randomised to the standard-care control group received standard medical care and advice within the clinic context as well as the follow-up phone calls measuring sexual behaviour over the one- and three- months of follow-up.

Participants

The sample was MSM, with a mean age of 31 $SD = 11.5$, $min = 18$, $max = 60$) years. The majority were single (74%) and tertiary educated (60%), with 35% completing high school. Approximately half (51%) worked full-time, 22% identified as students and 5% were supported by a disability support pension. On average, the sample consumed less than one standard alcoholic drink per day, and almost one third reported binge drinking at least weekly.

Fifteen out of the 69 men who were approached and eligible for the study refused to participate because of time constraints or disinterest. Fifty-four MSM who met eligibility criteria agreed to participate and were randomised into either the MI intervention group or the standard-care control group. The response rate was 78%.

Of the initial 54 participants, 13 (seven MI and six controls) did not complete the intervention ($n = 7$) or one month data collection points ($n = 6$) either because they repeatedly missed MI appointments or were lost to follow-up. The participation numbers at each stage of the study are contained in Table 1.

Table 1

Participation Numbers at Recruitment, One- and Four-Month Follow-up

Group	Time 1 Pre-Test	Intervention	Time 2 1 month Post-Test	Intervention	Time 3 4 months Post-Test
MI Experimental	<i>n</i> = 27	MI + standard care	<i>n</i> = 20 (74%)	MI booster	<i>n</i> = 16 (59%)
Standard Care Control	<i>n</i> = 27	Standard care only	<i>n</i> = 21 (77%)	Nil	<i>n</i> = 16 (59%)

Measures

The outcome variables *Sexual Risk Behaviour* and *Number of Sexual Partners* were measured via self report of sexual behaviour at baseline (representing the previous three months) and follow-up (representing the previous one and three months).

Sexual risk behaviour. Defined as self-reported frequency of UAI with a casual partner and/or UAI with a serodiscordant or unknown HIV status regular partner.

Number of sexual partners. The self reported number of sexual partners with whom anal sex occurred, including the number of regular and casual partners.

Post-MI sexual behaviour. Self-reported sexual risk and number of partners at one- and four- months post-MI.

Sociodemographics and sexual health medical history. Baseline sociodemographic variables were age, country of birth, education level attained, employment and relationship status. Self-report sexual health variables included HIV status, HIV/STI testing history and previous positive STI tests were also determined.

STI test result. Laboratory confirmed STI results at recruitment were accessed from participant medical records, to ensure equivalent groups at baseline.

Statistical Analysis

The Statistical Package for the Social Sciences (SPSS) Version 17.0 (SPSS, 2008) was used for data analysis and p-values were set at .05. A sample size of $N = 50$ was determined to achieve a power of 80% to detect a difference of 25% between the MI and control groups with alpha set at .05 (Faul, et al., 2009).

Simple descriptive summary statistics (means and standard deviations for continuous variables and frequencies/percentages for categorical variables) were used to describe the sample. Pearson's chi-square and Fisher's Exact test were used to determine the impact of MI on sexual risk behaviour at one- and four-months post-test. Independent t-test and Mann-Whitney U test compared change scores between the MI intervention and standard care control groups (between-subject effects). As the distribution of sexual partners and change scores were non-normal at one-month follow-up (Kolmogorov-Smirnov = .003), Mann-Whitney U Test was utilised to compare change scores between the MI intervention and standard care control groups. The distribution of sexual partners and change scores met the assumption of normality at four-month post-test (Kolmogorov-Smirnov = .012), therefore independent t-test tested for between group differences at four-month post-test (Tabachnick & Fidell, 2001).

In order to examine the differences over time for the MI and Control group on sexual partner change scores, within-subject effects were conducted using a one-way repeated measures analysis of variance (ANOVA) to evaluate baseline, one and four-month follow-up post-test scores for the MI intervention group and for the standard care control group.

Analyses (independent samples *t*-tests/ Fisher’s exact test) were conducted to determine whether lost to follow-up was comparable across the MI intervention and control groups, and to examine group differences at baseline.

Results

Baseline Characteristics and Behaviour

Sociodemographic variables, frequency of HIV/STI testing history, STI test results and sexual behaviour in the past three and 12 months are presented in Table 2 and Table 3 for each group.

Table 2

Sociodemographic and Sexual Health Characteristics at Recruitment for the MI and Control groups

Variable	MI Group (<i>n</i> = 20)	Controls (<i>n</i> = 21)	Significance * <i>p</i> < .05.
Sociodemographics			
Age (<i>M, SD</i>)	29.7 (11.1)	32.1 (11.2)	
Relationship status: single (% <i>n</i>)	85% (17)	62% (13)	
Employed full-time (% <i>n</i>)	45% (9)	52% (11)	
Tertiary education (% <i>n</i>)	60% (12)	62% (13)	
Sexual Health Testing History			
	(% <i>n</i>)	(% <i>n</i>)	
	(range)	(range)	
Past STI test	85% (17)	90% (19)	
Past STI positive	45% (9)	47% (10)	
	(0–10)	(0–4)	
HIV positive	15% (3)	19% (4)	
Don’t know	5% (1)	5% (1)	
#Positive STI at recruitment	30% (6)	24% (5)	

Note. #missing data for STI result MI = 5, controls = 3.

As indicated in Table 2, the majority of participants in both groups reported having STI tests (85-90%), with almost 50% having a past positive STI and 15% testing HIV positive. Eleven participants had a positive STI result at recruitment.

Table 3

Sexual Behaviour Characteristics at Recruitment for the MI and Control groups

Variable	MI Group (n = 20)	Controls (n = 21)	Significance *p < .05.
Sexual Behaviour	(M, SD)	(M, SD)	
Total sexual partners			
Past 3 months	9.3 (6.5)	5.3 (6.7)	*
Past 12 months	23.7 (23.6)	13.5 (15.7)	*
Number of casual partners			
Past 3 months	8.7 (6.7)	4.6 (6.8)	*
Past 12 months	22.6 (23.5)	11.3 (13.7)	*
Regular partners			
Past 3 months	0.6 (0.7)	0.7 (0.6)	
Past 12 months	2.0 (3.1)	2.1 (5.5)	
Proportion of UAI			
Past 3 months	40.4 (38.7)	62.9 (33.6)	
Past 12 months	30.2 (28.2)	47.8 (29.9)	

Note. Proportion of UAI is calculated by dividing total number of anal sex events by the number of UAI events with casual and/or serodiscordant regular partners.

It can be seen in Table 3, the two groups differed significantly on the mean number of total sexual partners in the past three months ($U = 109.5, p = .008$), 12 months ($U = 116.5, p = .038$), and on the mean number of casual sexual partners in the past three ($U = 106, p = .006$) and 12 months ($U = 114, p = .033$), with the MI intervention group having on average more sexual partners than the control group at baseline.

Lost to follow-up

To examine whether drop-out was evenly distributed across groups, Fisher's exact test and student's t-tests on UAI and number of sexual partners respectively revealed no significant differences between the 32 participants who completed the four month post-test data collection and the nine who were lost to follow-up on any one-month post-test sexual risk behaviour measures (proportions of UAI, $p = .544$, Fisher's exact test and frequency of sexual partners $t(39) = 2.44$, $p = .232$). The two groups differed on age ($t(39) = -2.56$, $p = .016$), with the men lost to follow-up being on average younger (mean age of 25 versus 32 years).

MI Intervention Effects

Sexual Risk Behaviour

UAI with a casual and/or serodiscordant/unknown HIV status regular partner.

Figure 1 displays the proportion of participants meeting criteria for high risk sexual risk behaviour at recruitment (i.e., based on their self-reported sexual behaviour for the preceding three months) and at one- and four-months post-test follow-up for both the MI intervention and standard care control groups.

The proportions of sexual risk behaviour was not significantly different between groups at one-month post-test ($\chi^2(1, N = 41) = 2.78$, $p = .095$), however at four-months post-test the proportions of sexual risk behaviour was significantly different between the two groups ($p = .019$, Fisher's exact test) (see Figure 1).

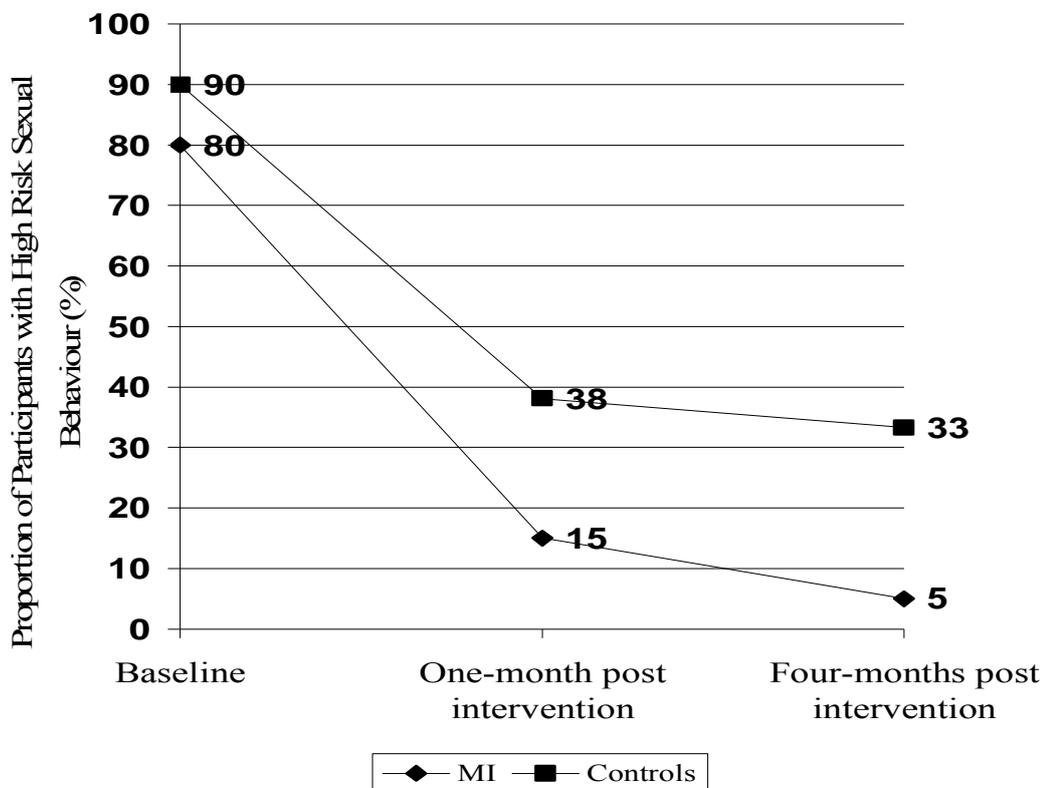


Figure 1. Proportion of sexual risk behaviour at baseline, one- and four- months post-test for the MI Intervention and Control group.

It can be seen in Figure 1 that both groups displayed reductions in sexual risk behaviour at one-month follow-up. All sexual risk behaviour at one month follow up met the criteria of UAI with a casual partner. At four month follow-up all but one participant in the MI intervention group reported no sexual risk behaviour compared to seven in the control group. Proportions of risk at four-month follow-up in the control group were distributed as UAI with casual partners ($n = 4$) and UAI with a regular partner of unknown HIV status ($n = 3$). In the MI group, the one participant with sexual risk behaviour had UAI with a casual partner.

The MI group had a reported reduction in sexual risk behaviours (frequency of UAI) from a baseline mean of 3.9 (*SD* 5.0) to a mean of 0.15 (*SD* 0.4) at one month and 0.1 (*SD* 0.5) at four-month follow-up. The control group had a reduction in UAI from a baseline mean of 3.0 (*SD* 2.9) unprotected acts, to less than one self reported unprotected sexual act at one month follow-up (0.8, *SD* 0.9), however by four-month follow-up the standard care control group had returned to baseline levels (2.9, *SD* 5.3).

Reductions in Sexual Partners Associated with MI.

Change scores were used to determine the effect of MI on number of sexual partners at one- and four-months post MI Intervention (Figure 2).

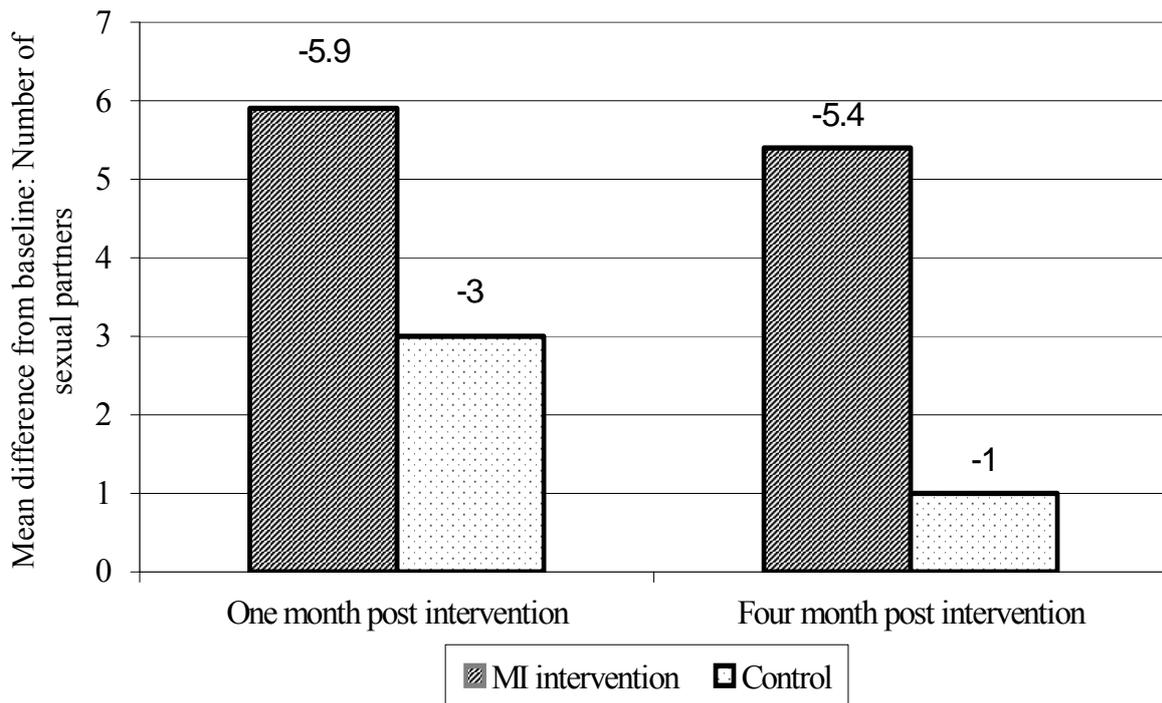


Figure 2. Mean of change scores from baseline at one- and four- months post-test for the MI intervention and control group.

There was a reduction in the mean change scores for sexual partners from baseline in the MI and control groups at one month and at four months. As illustrated in Figure 2, this difference was statistically significant at one-month ($U = 120.5, p = .019$) and four-months post-test ($t(30) = -2.08, p = .047$). The MI group displayed a greater reduction in sexual partners at both time points.

In order to determine differences in sexual risk behaviour for the MI and control groups respectively across time points (within-group effects), a one-way repeated measures ANOVA was conducted to determine mean group differences in the number of sexual partners at baseline, one and four-month post-test. There was a significant main effect for Time for the MI intervention group [Wilks' Lambda=.46, $F(2, 14)=8.16, p = .004$, multivariate partial eta squared=.54.], but not the control group [Wilks' Lambda=.78, $F(2, 14)=1.93, p = .181$, multivariate partial eta squared = .22.].

Discussion

The results of this study suggest that a brief MI session, implemented during the course of routine clinical care, reduced self-reported sexual risk behaviours (UAI and frequency of sexual partners) in high-risk MSM accessing primary care services. The hypothesis that MI would reduce sexual risk behaviour post intervention compared to standard-care controls was partially supported. The 29% reduction in high sexual risk behaviour (UAI with a casual and/or serodiscordant or unknown HIV status regular

partner) in those who received MI was statistically significant at four months post-intervention compared to standard-care controls. Contrary to prediction, the reduction of 23% in the MI group relative to controls did not reach statistical significance at one month post-intervention.

As predicted, the mean of change scores in sexual partner numbers was significantly greater in the men participating in MI at both one and four-months (-5.9 and -5.4 respectively) post-intervention relative to the standard-care group (-3 and -1 respectively). The significantly greater reductions in sexual partners in the MI relative to the control group at both time points post-intervention provides support for the effectiveness of MI in this high risk group. That the MI group reported more sexual partners at baseline relative to the control group, yet less at four-month follow up indicates substantial and sustained self-reported reductions in sexual risk behaviour in this group relative to those who did not receive this intervention. Taken together, these findings provide evidence of sexual risk reduction following a brief MI intervention for men with high sexual risk behaviours.

This study is consistent with the findings of past research (Fisher, et al., 2006; Kuyper, et al., 2009; Naar-King, et al., 2006; Patterson, et al., 2008), who also reported significant reductions in sexual risk behaviours in their participants following MI, and contributes to the accumulating body of evidence supporting the effectiveness of MI as a viable strategy in HIV/STI prevention. These results are also consistent with a meta-analysis of HIV prevention interventions for MSM (Johnson, et al., 2003), citing an effect size of 27% (CI 15% to 37%), often for much longer and more intensive behavioural

interventions. Therefore, MI may well offer a substantially more efficient alternative intervention for this group of high sexual risk takers.

Approximately one-third of participants in the standard care control group had sexual risk behaviour (UAI) at one (38.1%) and four (33.3%) month follow-up, which is similar to the level of risk identified in the gay men's community based survey (29.4%) (Frankland, et al., 2008). The reduction of UAI also observed in the standard care control group suggests that attending a sexual health or infectious diseases clinic reduces immediate risk taking (from 90% at baseline). However risk levels remained slightly higher than community levels at follow-up, whereas the participants in the MI group decreased their risk behaviour a further 10% over the four-month follow-up period. In contrast to the MI group, self-reported changes in the number of sexual partners in the control group showed a trend of returning to baseline levels by four-months post-intervention. This indicates that behavior changes associated with clinic attendance, or indeed involvement in a research study, is not sustained without an intervention.

It appears the 15 minute telephone 'booster' session is important, as further reductions in risk taking behaviours continued following the booster, and may account for the lower reported sexual risk at four-month follow up in the MI group relative to the control group. Future research should investigate the impact of additional telephone booster sessions in sustaining behavior change, given the feasibility of this brief intervention. Telephone 'booster' sessions using MI are cost effective and presumably less intensive for staff and participants and therefore have clinical applicability. Conducting the MI session on recruitment (i.e., at the time of clinic visit) appears important for study completion. In this study, those who were lost to follow-up in the MI

group did not complete the MI intervention on recruitment as they had scheduled their appointment for another time. This has practical implications for service delivery, suggesting MI should be included as part of routine care at the clinic for optimum therapeutic results to ensure engagement in the process.

There are a number of limitations to the current study. This study had a small sample, therefore future research should include a larger sample to overcome issues of statistical power. A larger sample at recruitment would also help ensure an appropriate sample at post-intervention time points, given sample attrition. It is possible that those who had more risky behaviour dropped-out of the study leading to bias in the results. However, those lost to follow-up were no different on baseline measures of risk behaviours compared to those who completed the study. Although the differences between completers and those lost to follow-up were relatively minimal, with lost to follow-up being younger, the generalisability of these results may be compromised.

Another limitation is the exclusive use of self-report when measuring sexual risk behaviour due to self-report bias. However, the randomised nature of the study and the use of blind telephone assessors may have helped to decrease this limitation. The use of a biological outcome variable (HIV/STI result) would overcome self-report bias, however since HIV/STI transmission is behaviourally driven, this does not seem necessary and negates the fact that risk behaviours can occur without transmission of infections. Ultimately it is the behaviour that needs to change. Furthermore, a reporting bias for sexual risk behavior may have occurred in the intervention group, who were aware of receiving the intervention leading to possible under-reporting. The use of a comparison condition, such as education sessions, may help reduce this possible bias in the future.

A major strength of this study is the randomised design of group membership, the inclusion of a standard care control group, as well as a more rigorous definition of 'risk' behaviour than past research, which has included oral sex in risk definitions. This study focused on the well established and known sexual risk behaviours for HIV/STI transmission, namely UAI. Future research including longer follow-up periods and larger samples are needed to accurately determine the utility of MI in achieving reductions in high risk sexual behaviours. The impact of additional telephone booster sessions on sustaining these reductions also warrants further investigation, especially given the feasibility of this aspect of the MI intervention in maintaining reductions in sexual risk behaviours in high risk populations.

In summary, this study adds to the accumulating body of evidence that a brief one-to-one MI session with a follow-up telephone booster session is a deliverable and cost effective technique in supporting behaviour change for HIV prevention and health care behaviours (Fisher, et al., 2006; Kuyper, et al., 2009; Naar-King, et al., 2006; Patterson, et al., 2008). What is promising about this approach is its efficacy (i.e, it is a brief and time-limited intervention), in leading to measurable reductions in self-reported sexual risk. It is less intensive and more cost-effective when compared to longer interventions. These findings confirm that MI can also be tailored to high risk MSM, a group for whom there has been increasing diagnosis of HIV infection in Victoria, Australia. Training health care professionals to deliver MI in primary care settings as part of routine clinical care should be considered as a standard component of HIV prevention in high-risk populations.

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CHAPTER 8: INTEGRATED DISCUSSION

8.0 Summary of Key Research Findings

The overall aims of this sequential two-phase study were to determine the mental health status of MSM accessing a sexual health and infectious diseases clinic; to examine relationships between sexual risk behaviours and mental health status; and to determine the efficacy of a MI intervention in reducing risky sexual behaviours in a high sexual risk group of MSM. It has furthered research in the area of psychological and sexual health in MSM by being the first to have simultaneously examined the impact of psychological constructs and a MI intervention for high risk sexual behaviour in the context of increasing HIV diagnoses in this group. Furthermore, the results provide support for the importance of examining personality traits and using social-cognitive theory to improve understanding of HIV/STI risk behaviour. The findings provide additional information about the mental health status of MSM and the effectiveness of MI in supporting behaviour change.

8.1 Aim One: The Mental Health Status of MSM

Elevated levels of psychological symptoms were found in a sample of MSM attending for routine HIV/STI care in Victoria, Australia, regardless of their HIV status. High levels of Social Withdrawal, Acting Out, Suicidal Thinking and Negative Affect were evident in this group. Morey (1997) concluded that high scores on the Social Withdrawal scale may be driven by a number of factors such as apathy (due to

depression); marked shyness or social anxiety; trauma-related alienation (i.e., post traumatic stress disorder); autistic withdrawal (i.e., schizophrenia); distrust (i.e., paranoia); or unstable relationships (i.e., borderline personality). Morey also suggested that high scores on the Acting Out scale may be due to underlying disorders such as substance abuse, or the impulsive components of personality disorders (i.e., anti-social or borderline personality), or manic episodes leading to reckless behaviour. Scores in the marked range for Suicidal Thinking may be driven by disorders associated with elevated risk for suicide, such as major depressive or borderline personality disorders. However, Morey reported that the presence of an emotional problem substantially increases the risk of suicidal ideation. High scores on the Negative Affect scale in the current study may be due to emotional disorders such as depressive and anxiety disorders, including post traumatic stress disorder. Other disorders with an affective component may also lead to high scores, such as Schizoaffective and borderline personality disorder (Morey, 1997). The findings of the current study warrant further research into the aetiology of these symptoms to inform the treatment and management of psychological disorders in MSM. These results reported in paper one, indicated that a third of the MSM attending metropolitan primary health services display clinically significant psychological distress with concerning levels of mood disturbance and suicidal ideation. Importantly, psychological distress scores were independent of HIV status. This confirms Mao et al.'s (2009) findings that HIV status was not independently associated with major depression in MSM, and indicates that psychosocial issues may be related to sexual orientation or to some factor other than HIV status. Bagley and Tremblay (2000) and Remafedi et al. (1998) reported that MSM are four times more likely to report a serious suicide attempt

than heterosexual men. Taken together, the findings of the current study as well as past research indicate an urgent need to provide psychological assessment, support, and, where required, treatment for MSM accessing primary care, regardless of their HIV status. These findings suggest incorporating effective treatments for mood disorder and suicidal ideation into sexual health clinical settings is warranted.

8.2 Aim Two: Sexual Risk Behaviours

High levels of sexual risk behaviour were identified in this study. MSM with high sexual risk behaviour had more sexual partners, illicit drug use, and sexual sensation seeking traits relative to MSM with lower sexual risk behaviour. Sexual risk takers also had less motivation to change their behaviour (lower stage of change), less confidence in their ability to use condoms (lower self efficacy) and less use of negotiation skills for condom use. Despite the large number of studies investigating the predictors of HIV transmission, the relationship between psychological health and sexual risk behaviours remains somewhat uncertain. However, a number of correlates and predictors have emerged in the research literature. These include behavioural factors such as increasing number of sexual partners and sexual acts (Koblin, 2006) and substance use (Clutterbuck, et al., 2001; Dudley, et al., 2004; Halkitis, et al., 2005; Semple, et al., 2006; Stueve, et al., 2002). These factors have been consistently associated with risky sexual behaviour and the findings of the current study are consistent with these. The personality traits of impulsivity, sensation seeking and compulsivity have also been shown to be associated with sexual risk taking in past research (Benotsch, et al., 1999; Benotsch, et al., 2001;

Kalichman, et al., 2003; Semple, et al., 2000; Semple, et al., 2006). However, in the current study only the sensation seeking personality trait was found to be associated with sexual risk behaviour. Findings regarding the association between negative mood and risky sexual behaviour, have been mixed (Beck, et al., 2003; Parsons, et al., 2003; Rogers, et al., 2003), and in the current study higher negative affect (lower mood/depression) was associated with less sexual risk behaviours, with sexual risk takers having lower Negative Affect scores (less depression). The mean scores in both groups fell in the moderate range on the PAS, suggesting that, on average, these participants were experiencing clinically significant symptoms of depression. However, those with slightly lower scores (although still in the moderate symptom range) were more likely to engage in sexual risk behaviours than those with slightly higher depression scores. This finding is consistent with Rogers et al. (2003) who reported no relationship between major depression and risk taking, but did find that MSM with dysthymia were twice as likely to be sexual risk takers than MSM without this diagnosis. The current findings suggest certain elements of mood disorder and personality, such as dysphoric mood and sensation seeking traits, differentiate between those with and without sexual risk behaviours. Cooper, Agocha and Sheldon (2000) described that sensation seeking may serve as coping strategies for the regulation of negative affect. For instance, an individual may use alcohol, illicit drugs or engage in risky sex (i.e., the sensation seeking behaviour) to lift their dysphoric mood state (Cooper, et al., 2000). In the current study, it appears that sexual risk may be driven by a number of factors. For example, the sensation seeking/thrill-seeking personality trait was associated with sexual risk behaviour, suggesting that this is potentially motivated by the need to experience a 'high' or 'thrill'.

It is also possible that the 'high' or 'thrill' seeking behaviour is adopted as a strategy for lifting negative mood states.

Further psychological constructs that appear to be driving risk behaviour identified in the current study were little belief in ability in negotiating safe sex, and little confidence in ability to perform safe sex under given circumstances (i.e., condom-use negotiation and condom-use self-efficacy). MSM with high risk sexual behaviour had significantly lower scores on the negotiation skills and self-efficacy scales compared to those with low sexual risk behaviours. These results are consistent with the Transtheoretical Model (Stages of Change) of behaviour change, which purports that high self-efficacy contributes to successful health-related behaviour change (Prochaska & DiClemente, 1986). Stage of Change also differentiated between MSM with and without sexual risk behaviours, as participants with high risk sexual behaviour had significantly lower scores on the Stages of Change scale relative to those with low risk behaviours. This finding provides some indication that the Stages of Change framework may be usefully applied to the assessment of sexual risk behavior in MSM.

In summary, a profile of MSM with high sexual risk behaviour who are accessing HIV/STI routine care has emerged through this study. Not surprisingly, MSM with high sexual risk behaviour have more sexual partners, illicit drug use, and sexual sensation seeking traits relative to MSM with lower sexual risk behaviours. They are also characterised by being less ready to change their behaviour (lower stage of change), having less confidence in their ability to use condoms (lower self efficacy) and less use of skills to negotiate condom use. Their mood was also slightly better than those without sexual risk behaviour. The direction of these relationships are unclear from the current

study, and it is not being suggested that the nature of these relationships are causal. However, the characteristics outlined here might be viewed as a marker for high-risk sexual behaviour, even in the absence of causal relationships. The characteristics of this group represent a marker for a complex set of psychosocial variables that result in higher risk. These characteristics of high sexual risk MSM that were identified in this study should be seriously considered when assessing the overall health needs of this client group.

8.3 Aim Three: Motivational Interviewing

MSM who underwent two sessions of MI showed greater reductions in sexual risk taking behaviours four months following the intervention relative to MSM who received standard care. In the context of increasing HIV diagnosis in Victorian MSM, there is an urgent need for early and brief interventions at the primary care level. MI has been shown to be efficacious in changing addiction-related health behaviours (e.g., substance use and smoking) (Carroll, et al., 2001; Graeber, et al., 2003; Gray, et al., 2005); adherence to treatment and medication (Swanson, et al., 1999); and diabetes management (West, et al., 2007). Furthermore, early studies (Fisher et al., 2006; Kuyper et al., 2009; Naar-King et al., 2006; Patterson, et al., 2005) have suggested its applicability to HIV prevention. Adding to this evidence are the results of the current study that indicate the value of MI as an effective sexual risk behaviour reduction strategy in a sub-group of high risk MSM who had reductions in UAI and also number of sexual partners. These findings are consistent with Fisher et al. (2006), Kuyper et al. (2009), Naar-King et al. (2006) and

Patterson et al. (2008), who also reported significant reductions in sexual risk behaviours following an MI intervention. The findings of the current study therefore contribute to the accumulating body of evidence supporting the effectiveness and feasibility (Kuyper, et al., 2009; Patterson, et al., 2005) of MI as a viable strategy in HIV/STI prevention. The findings are also consistent with a meta-analysis of HIV prevention interventions for MSM (Johnson, et al., 2003), citing an effect size of 27% (CI 15% to 37%), often for much longer and more intensive behavioural interventions. Therefore, MI may well offer a substantially more efficient alternative intervention for high sexual risk takers. Previous research has included participants with and without high risk sexual behaviours (Fisher et al., 2006; Naar-King et al., 2006). Therefore, a unique contribution of this study was the inclusion of only those men with high risk sexual encounters over the preceding 12 months.

The findings of the current study indicate that MI has promise as a HIV prevention intervention in high risk MSM that targets important aspects of the underlying drivers of sexual risk behaviour, namely low self-efficacy and readiness for change. MI is also useful in that it can target more than one established risk behaviour simultaneously, for example UAI, number of sexual partners and substance use. That the number of UAI and sexual partners was also reduced indicates that supporting the individual's preferences and belief about their behaviour change during MI addressed multiple risk behaviours. The booster MI session delivered in this study appears to be important for continued decrease in risk behaviour. In summary, the results of the current study suggest that MI is an effective sexual risk reduction intervention for high-risk MSM that warrants inclusion in existing care. The findings also add to the accumulating body of evidence

that MI is a viable HIV/STI prevention intervention in the context of increasing HIV diagnoses and concurrent STIs.

8.4 Study Limitations

A number of limitations in this study must be taken into consideration when interpreting the current findings. One such limitation is the reliance on self-report when assessing sexual risk. It is possible that participants may have either under or overestimated their sexual behaviours, particularly given the retrospective nature of the recall (i.e, in the preceding one and three months) and the nature of the event (i.e., sexual behaviours). A further limitation when considering the results of the MI intervention is the small sample size and the high number of study drop-outs that may lead to biased results. It is possible that those who did not change their behaviour were lost to follow-up, leading to a Type II error. The opposite relationship is also possible, whereby participants who successfully changed their behaviour were lost to follow-up (Type I error). Furthermore, MSM in the pre-contemplation stage of behaviour change may not present for HIV/STI testing, or indeed, agree to participate in research such as the current study, due to seeing no reason to change their current behaviour. Therefore, MI may not be effective in MSM who are in the pre-contemplation stage regarding their risk behaviours.

A caution on the generalisability of the current results is warranted. Since participants were recruited from a sexual health and infectious diseases outpatient clinic, the findings cannot be generalised to those who are not engaged in such health services

and are possibly harder to reach populations. Also, higher levels of sexual risk behaviour were identified in the current study compared with community-based surveys. This difference appears logical given that the participants were attending sexual health and infectious diseases clinics for STI testing and therefore, were possibly seeking testing due to sexual risk behaviours. Therefore, the current results may not generalise to the general population of MSM.

A consideration when interpreting the operationalisation of ‘sexual risk behaviour’ in the current study should be taken into account. When measuring sexual behaviours, specific sexual positions for anal sex (i.e., being the receptive or insertive partner) was not assessed to measure per-episode risk of HIV/STI transmission, with receptive UAI the riskiest position for HIV negative men (Frankland, et al., 2008). In the era of increasing HIV in the State of Victoria, Australia, following years of health education and safe-sex promotion, this study defined UAI as risky sexual behaviour, regardless of the per-episode sexual position.

8.5 Future Research

Future prospective studies employing biological outcomes (HIV/STI results) will overcome the bias associated with self-reported sexual behaviour. However, due to the relatively low incidence of HIV in Australia, much larger sample sizes would be necessary to provide the statistical power required to detect outcomes. Additional randomised controlled trials for MI, with a larger sample size is required to accurately determine the efficacy of MI in achieving sexual risk reduction in MSM. Longer term

follow-up assessment is also required to ascertain the sustainability and maintenance of behaviour change over time, and to identify antecedents to relapse. Future studies could investigate the role of 'booster' MI sessions which can be delivered over the telephone. These studies are required to determine whether the positive changes observed in the current study are sustained over longer periods, and to ascertain whether reductions in self-report sexual risk behaviours leads to a decrease in the incidence of HIV/STI transmission.

Prevention interventions which include substance use and mental health treatment conditions, as well as outcomes on sexual risk behaviours will shed further light on the direction of the relationship between sexual risk behaviour, substance use and mental health problems. Furthermore, causal relationships between substance use and sexual risk, or some other changes in other variables in the casual pathway (such as general health self-efficacy and readiness for change) that affects both substance use and sexual activity require additional research. Further investigation of the explicit mechanisms that underlie these relationships and the aetiology of these constructs (i.e., substance use and mood disorder) is required. These studies will add greater understanding to this topic beyond that of cross-sectional designed studies which measure correlations between variables.

Prospective cohort studies on larger samples will allow for causal relationships to be examined, taking into consideration the possible mediating and moderating effects of psychological attributes. Given the relationships between substance use, psychological distress and sexual risk behaviours found in the current study, it is possible, indeed likely, that improvements to psychological health, including substance use in MSM may lead to

concomitant reductions in sexual risk behaviours. A prospective cohort study involving MSM with identified mental health issues who are undergoing treatment is required to accurately determine the causal relationship between mental health, substance use and sexual risk.

8.6 Implications of the Findings for Health Care

The results of this study provide some hope regarding the future of HIV/STI prevention work for MSM who attend primary health services for routine care. The findings indicate that recognition of high risk MSM can lead to input from a health care professional to resolve ambivalence about risky sexual practices. A specific recommendation based on the current study is for mental health assessment to be included as part of routine care for MSM accessing sexual health and infectious diseases clinics. To ensure staff are sufficiently skilled in mental health assessment, mental health specialists (e.g., psychiatrists and psychologists) could train health professionals, such as nursing staff, to undertake psychological screening of MSM. This recommendation should be considered, since nurses offer an important contact point in the clinical setting.

A further recommendation is for interventions to be offered to MSM targeting mental health in addition to sexual risk and substance use behaviours as part of routine HIV/STI care. Again, this is important as health professionals are crucial contact points for identifying and potentially intervening in risk taking behaviours. Kalichman et al. (1994) suggested that individuals with high sexual sensation seeking dispositions, and who continue to engage in sexual risk behaviour may benefit from interventions that

increase the apparent novelty, sensations, and eroticism of safer activities. Furthermore, these authors also suggested that the use of cognitive approaches aimed at attributing increased positive novel sensations towards safer activities such as condom-use may also help support behaviour change in those with strong sensation seeking profiles.

An individual's stage of change can be quickly and easily assessed within minutes using the Readiness Ruler (Miller & Rollnick, 2003), and therefore has the potential to be easily integrated into routine clinical care. It may also provide health care professionals with valuable information about their client's motivation for behaviour change, so that strategies to achieve such change can be targeted at the individual level. For example, interventions can be tailored depending on where the individual is positioned on the Stages of Change categories. Interventions that build self-efficacy may also be considered, given that higher self-efficacy scores have been shown to be related to successful condom-use behaviour change (Semple, et al., 2004).

It is anticipated that the MI intervention reported in this study will have practical implications for health professionals working with high-risk MSM. For example, it is hoped that an intervention such as this can be incorporated into routine HIV/STI care and that health professionals working with MSM can be trained to deliver MI as part of their routine sexual health assessments and treatment. The high cost of HAART and other HIV-related expenses, including lost productivity, means that individual HIV/STI prevention in high-risk MSM will be likely to be cost-effective. Although a great deal of success was achieved in the early years of the HIV/AIDS epidemic, rates of HIV/STIs in Victoria have not been significantly reduced by educational campaigns over the recent past. Identifying modifiable risk factors will enable more effective targeting of health

promotion campaigns to Victorian MSM at the same time as ascertaining risk factors at the individual level for personalised prevention work.

As previously discussed, recreational drug use was associated with symptoms of psychological distress and increased sexual risk behaviours in the current study. These findings indicate the need for dual message health promotion campaigns that target both substance use and mental health in MSM. Health promotion campaigns targeting risky sexual behaviour in the context of illicit substance use are relatively common. However, the findings of the current study confirm the importance of including mental health issues in these campaigns. At the very least, the findings of this study indicate a need for active campaigns to determine and, where necessary, improve the mental health of MSM. Regardless of the direction of the relationships between sexual risk behaviour and mental health and substance use, the poor mental health status of at least a third of the MSM in the current study confirm the need for psychological support, and the issue of mental health should be addressed in conjunction with their sexual risk behaviour.

In summary, it seems a missed opportunity that MSM accessing HIV/STI sexual health clinics are not screened for mental health problems. The provision of brief and effective intervention to address sexual risk behaviours at the time when these men are engaging with health care professionals is indicated. MI is an adaptive approach to behaviour change and one which can target multiple risk behaviours simultaneously. In the context of the current findings, future implementation of MI should focus on both sexual risk behaviours and illicit substance use. The use of psychological screening measures in addition to sexual health assessment of MSM attending sexual health/HIV clinics is also indicated, and may provide valuable information to improve the mental

health status of this client group, regardless of their HIV status. Training health care professionals to deliver MI in a primary care setting, and to screen for psychological problems as part of their routine clinical care should also be considered as a standard component of HIV prevention in high sexual risk populations in Australia.

8.7 Concluding Remarks

One conclusion that can be drawn from this research is that sex, especially high risk sexual encounters, is a complicated behaviour and human behaviour does not exist in isolation from social, environmental and emotional influences. Determining the nature of the relationships between high risk sex, substance use and psychological factors is not simple. Investigating sexual risk behaviour and its relationship with these factors is necessary if trying to determine a solution to a public health issue.

In conclusion, the results presented in this thesis contribute evidence regarding the role of mental health and readiness for behaviour change in HIV/STI sexual risk. In addition, the findings of this study provide further information about the mental health status of MSM, and for the effectiveness of MI in achieving behaviour change. The present study has furthered research in the area of psychological and sexual health among MSM by being the first study to examine both the impact of psychological profiles and a MI intervention for high risk sexual behaviour in the context of increasing HIV diagnoses in Australian MSM.

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Appendix A: Participant Information and Consent Form



Participant Information and Consent Form

Version 1 Dated 22/02/2008

Site The Alfred hospital

Full Project Title: A Randomised Controlled Trial of Motivational Interviewing to reduce sexual risk behaviour in men who have sex with men.

Principal Researcher: Associate Professor Anne Mijch

Associate Researcher(s): Dr Margaret Hay, Ms Tania Gibbie.

This Participant Information and Consent Form is 5 pages long. Please make sure you have all the pages.

1. Your Consent

You are invited to take part in this research project. This Participant Information contains detailed information about the research project. Its purpose is to explain to you as openly and clearly as possible all the procedures involved in this project before you decide whether or not to take part in it.

Please read this Participant Information carefully. Feel free to ask questions about any information in the document. You may also wish to discuss the project with a relative or friend or your local health worker. Feel free to do this.

Once you understand what the project is about and if you agree to take part in it, you will be asked to sign the Consent Form. By signing the Consent Form, you indicate that you understand the information and that you give your consent to participate in the research project.

You will be given a copy of the Participant Information and Consent Form to keep as a record.

2. Purpose and Background

The purpose of this project is to investigate a counselling technique (motivational interviewing) to reduce sexual risk behaviour for Human Immunodeficiency Virus (HIV) and Sexually Transmitted Infection (STI) transmission in men who have sex with men.

A total of 130 people will participate in this project.

You are invited to participate in this research project because you have sex with men.

3. Procedures

Participants will be randomly allocated into one of two groups, a standard clinic group (comparison group) or motivational interviewing session. Participation in this project will involve a 30 minute session with an interviewer and approximately 30 minutes of questionnaires to complete on your own. A follow-up telephone call and/or email of approximately 10 minutes will occur one and four months following the interview. Questionnaires will ask questions pertaining to your mental health, personality characteristics, sexual behaviour and drug and alcohol use.

The follow-up phone calls/emails will ask similar questions about recent sexual behaviour.

With your permission, your medical record will be accessed to provide information which may not be remembered by yourself, such as your STI test result.

4. Possible Benefits

Possible benefits arising from this project include a more accurate assessment of the health related psychological support and sexual health of men who have sex with men in a primary health setting. We cannot guarantee or promise that you personally will receive any benefits from this project.

5. Possible Risks

Possible risks, side effects and discomforts include the identification of mental health problems. If this occurs, your doctor will be notified and appropriate follow up will be offered. If adverse psychological reactions occur during interviewing, trained counsellors will be available through the clinics. Participants can suspend or even end their participation in the project at any time. There may be additional unforeseen or unknown risks.

6. Privacy, Confidentiality and Disclosure of Information

Any information obtained in connection with this project and that can identify you will remain confidential. It will only be disclosed with your permission, except as required by law. In any publication, information will be provided in such a way that

you cannot be identified. Information will be stored using an ID number (not names) in a locked cabinet, and will be kept indefinitely as per The Alfred hospital's policy. Only the study investigators will have access to this information. Under privacy laws, you may have access to the information obtained about you.

9. Results of Project

A summary of the results will be made available for you through the clinic where you were recruited. Results from this study will be presented as group data (not as individual results) and it is planned that the study will be presented at scientific conferences and published in a scientific journal.

10. Further Information or Any Problems

If you require further information or if you have any problems concerning this project (for example, any side effects), you can contact the study coordinator Ms Tania Gibbie on 9076 2653. The researchers responsible for this project are Associate Professor Anne Mijch and Dr Margaret Hay, Monash University, phone 9501 2583, Dr Michelle Earle and Ms Tania Gibbie, The Alfred phone 9076 2653.

11. Other Issues

If you have any complaints about any aspect of the project, the way it is being conducted or any questions about your rights as a research participant, then you may contact Ms Rowan Frew

Position: Ethics Manager

Telephone: 9076 3848

You will need to tell Ms Frew the name of one of the researchers given in section 10 above.

12. Participation is Voluntary

Participation in any research project is voluntary. If you do not wish to take part you are not obliged to. If you decide to take part and later change your mind, you are free to withdraw from the project at any stage.

Your decision whether to take part or not to take part, or to take part and then withdraw, will not affect your routine treatment, your relationship with those treating you or your relationship with The Alfred hospital.

Before you make your decision, a member of the research team will be available to answer any questions you have about the research project. You can ask for any information you want. Sign the Consent Form only after you have had a chance to ask your questions and have received satisfactory answers.

There is no law that requires the study information to be collected and there are no adverse consequences if you choose not to provide the information.

13. Ethical Guidelines

This project will be carried out according to the *National Statement on Ethical Conduct in Research Involving Humans* (June 1999) produced by the National Health and Medical Research Council of Australia. This statement has been developed to protect the interests of people who agree to participate in human research studies.

The ethical aspects of this research project have been approved by the Human Research Ethics Committee of The Alfred.

14. Reimbursement for your costs

You will not be paid for your participation in this project.



**Consent Form
Version 1 Dated 22/02/2008
Site The Alfred Hospital**

Full Project Title: A Randomised Controlled Trial of Motivational Interviewing to reduce sexual risk behaviour in men who have sex with men (MSM).

I have read and I understand the Participant Information version **1** dated *22/02/2008*.

I freely agree to participate in this project according to the conditions in the Participant Information.

I will be given a copy of the Participant Information and Consent Form to keep

The researcher has agreed not to reveal my identity and personal details if information about this project is published or presented in any public form.

Participant's Name (printed)

Signature

Date

Name of Witness to Participant's Signature (printed)

Signature

Date

Researcher's Name (printed)

Signature

Date

Note: All parties signing the Consent Form must date their own signature.

REVOCAION OF CONSENT FORM



Revocation of Consent Form

Full Project Title: A Randomised Controlled Trial of Motivational Interviewing to reduce sexual risk behaviour in men who have sex with men.

I hereby wish to WITHDRAW my consent to participate in the research proposal described above and understand that such withdrawal WILL NOT jeopardise any treatment or my relationship with The Alfred hospital.

Participant's Name (printed)

Signature

Date



APPENDIX B: ETHICS COMMITTEE CERTIFICATE OF APPROVAL

This is to certify that

Project No: 58/08

Project Title A randomised controlled trial of Motivational Interviewing to reduce sexual risk behaviour in men who have sex with men.

Principal Researcher: A/Prof Anne Mijch

Protocol No: 58/08

Participant Information and Consent Form version 4 dated: 9-May-2008

*was considered by the Ethics Committee on 27-Mar-2008 and **APPROVED** on 14-May-2008*

It is the Principal Researcher's responsibility to ensure that all researchers associated with this project are aware of the conditions of approval and which documents have been approved.

The Principal Researcher is required to notify the Secretary of the Ethics Committee, via amendment or progress report, of

- Any significant change to the project and the reason for that change, including an indication of ethical implications (if any);
- Serious adverse effects on participants and the action taken to address those effects;
- Any other unforeseen events or unexpected developments that merit notification;
- The inability of the Principal Researcher to continue in that role, or any other change in research personnel involved in the project;
- Any expiry of the insurance coverage provided with respect to sponsored clinical trials and proof of re-insurance;
- A delay of more than 12 months in the commencement of the project; and,
- Termination or closure of the project.

Additionally, the Principal Researcher is required to submit

- A Progress Report on the anniversary of approval and on completion of the project (*forms to be provided*);

The Ethics Committee may conduct an audit at any time.

All research subject to the Alfred Hospital Ethics Committee review must be conducted in accordance with the National Statement on Ethical Conduct in Human Research (2007).

The Alfred Hospital Ethics Committee is a properly constituted Human Research Ethics Committee in accordance with the National Statement on Ethical Conduct in Human Research (2007).

SPECIAL CONDITIONS

None



SIGNED: _____
Chair, Ethics Committee (or delegate)

Please quote Project No and Title in all correspondence

Appendix C: Summary of PAS Domains

(Morey, 1997; page 10-15).

Negative Affect

Element Items

- 4. Sometimes I let little things bother me too much.
 - 6. It's often hard for me to enjoy myself because I am worrying about things.
 - 20. I'm almost always a happy and positive person. (reverse scored)
-

The Negative Affect (*NA*) element is indicative of personal distress and reflects the experience of unhappiness and apprehension. This element is highly correlated with measures of depression and anxiety, although the *NA* element is associated primarily with the ideational rather than the physiological aspects of these emotions. High scorers are likely to feel tense, worried, and demoralized. Although the prevailing emotions may vary between tension and unhappiness, it is likely that the affective quality is considerably negative.

Acting Out

Element Items

- 8. I've done some things that weren't exactly legal.
 - 13. I never use illegal drugs. (reversed scored)
 - 18. I spend money too easily.
-

The *Acting Out* (*AO*) element is suggestive of the potential for a number of behavior problems. Personality traits associated with the *AO* element include impulsivity, sensation-seeking, and a disregard for convention. High scorers are likely to have a pattern of reckless behaviour and a history of difficulty with authority.

Health Problems

Element Items

9. It's a struggle for me to get things done with the medical problems I have.

11. I am in good health. (reversed scored)

The *Health Problems (HP)* element of the PAS involves indicators of somatic complaints and health concerns. The types of complaints may vary from vague symptoms of malaise to severe dysfunction in specific organ systems. High scorers will have significant concerns about somatic functioning and will probably report impairment arising from somatic symptoms.

Psychotic Features

Element Items

7. Some people do things to make me look bad.

14. Some people try to keep me from getting ahead.

The *Psychotic Features (PF)* element involves indicators of persecutory thinking and other psychotic phenomena. The item content focuses on features of paranoid psychosis. Other forms of delusional thinking are less well represented although the *PF* element appears to be empirically associated with such forms as well.

Social Withdrawal

Element Items

2. I'm a very sociable person. (reversed scored)

19. I make friends easily. (reversed scored)

The *Social Withdrawal (SW)* element reflects social detachment and discomfort in close relationships. High scorers will have little apparent interest or investment in social interactions. These people often seem cold and unfeeling, and others are likely to see them as unable to display affection or uninterested in making commitments to personal relationships.

Hostile Control

Element Items

3. I'm a "take charge" type of person.

22. People think I'm aggressive.

The *Hostile Control (HC)* element represents an interpersonal style characterized by needs for control and inflated self-image. Such a style is relatively rare in a general clinical population, but it can lead to considerable difficulties when present. The *HC* element is unique among the 10 PAS elements in that problems are associated with both high (i.e., 3-6) and low (i.e., 0) scores.

Suicidal Thinking

Element Items

5. I've thought of ways to kill myself.

15. I have thought about suicide for a long time.

The *Suicidal Thinking (ST)* element includes items tapping thoughts of death or suicide. Elevated scores suggest that the respondent has had at least some thoughts of

suicide. It is important to realize that such thoughts are generally common within clinical settings although fairly rare in the general population. As a result, elevations on *ST* are the rule rather than the exception when assessments are conducted in the context of a clinical evaluation.

Alienation

Element Items

1. My friends are available if I need them. (reversed scored)
 10. People around me are faithful to me. (reversed scored)
-

The *Alienation (AN)* element is indicative of an unsuccessful history of attachment relationships and a distrust of or disinterest in such relationships. High scorers feel that they have been unsupported and treated unfairly by those closest to them, and they maintain their distance in relationships and approach them skeptically. An elevation on *AN* does not necessarily imply that the respondent will be socially withdrawn, which would be more directly assessed by the *SW* element. Rather, the *AN* elevation implies failures in forming close relationships. Symptomatically, this element is associated with externalizing features (such as acting out and projection) rather than internalizing (such as anxiety or guilt) ones.

Alcohol Problem

Element Items

12. My drinking seems to cause problems in my relationships with others.
 21. I never drive when I've been drinking. (reversed scored)
-

The item content of the *Alcohol Problem (AP)* element involves behaviors and consequences related to alcohol use, abuse, and dependence. Questions inquire directly

about the use of alcohol; therefore, prominent denial of alcohol problems can suppress scores on the scale. High scores indicate that alcohol may be causing difficulties in interpersonal relationships or in work performance, and the respondent's current functioning may be impaired as a result of alcohol use.

Anger Control

Element Items

16. I have a bad temper.

17. It takes a lot to make me angry. (reversed scored)

The items on the *Anger Control (AC)* element tap difficulties in the management of anger. High scorers are likely to be chronically angry and will potentially express anger and hostility through verbal means, physical means, or both.

Appendix D: Study Questionnaires

Participant Number _____

Section A: Demographics

1. Age: _____ (years) 2. Postcode: _____
3. What is your country of birth? _____
4. Which of the following best describes your current employment situation? (*please tick one*)
 Full-time Part-time Unemployed Student disability/pensioner
5. What is the highest level of education you have finished? Yr 7-9
 Yr 10 Yr 11 Yr 12 Tafe university degree postgrad
6. What is your relationship status? Single Partner de facto
 Married to a man Married to a women Divorced

Section B: Sexual Health Testing History

7. Why are you seeing the doctor today? (*please tick*)
 It's my regular check-up
 Other Reason (*please specify*): _____
8. Have you ever been tested for a sexually transmitted infection (excluding HIV)? Yes No (skip to question 9)
- a) if yes, how many tests have you had in the past 5 years? _____
 b) How many have been positive (had an STI)? _____
9. What is your HIV status? (*please tick one*)
 HIV Negative → when was your last HIV test? _____ (Month/Year)
 HIV Positive → when were you diagnosed? _____ (Month/Year)
 Don't know, never had a test.

Section C: Drug & Alcohol use

10. In the past 12 months which drugs have you used (*tick one response for each drug*):

	More than weekly	Weekly	Less than weekly	Not in last 6 months	Not in last 12 months	Never tried
Marijuana						
Amyl/poppers						
Ecstasy						
Speed						
Crystal (ice)						
Viagra						
Cocaine						
Heroin						
Other (<i>please specify</i>) _____						

- 11a. On average, how many standard drinks of alcohol do you drink each day? _____
- 11b. How often do you have six or more drinks on one occasion?
 Never Less than monthly Monthly Weekly daily or almost daily

Eg. 1 standard drink = 1 stubbie of light beer, 1 pot of full strength beer, 1 nip/shot of spirits, 1 standard serve of wine (1 bottle of wine is equivalent to 7 standard drinks).

Section D: Sexual behaviour

*In this survey "regular partner" means boyfriend/lover/partner
 "casual partner" means any other partner.*

If you have not had **anal** sex in the past 3 months, please skip to question 21

12. In the past 3 months how many different men have you had **anal** sex with?

PARTNERS: REGULAR CASUAL TOTAL
 (*please complete*) _____ + _____ = _____

13. If you are in a REGULAR relationship with a man at present, do you know the result of his last HIV antibody test?

- Yes- he is positive
 Yes- he is negative
 He hasn't had a test
 I don't know
 I do not have a regular partner

Regular male partners: last 3 months (if no regular partner in last 3 months skip to question 16)

14. Have you had **anal** sex with your REGULAR male partner(s) in the past 3 months? Yes No (Skip to question 16)

15. In the past 3 months when having **anal** sex with your REGULAR male partner(s) have you always used condoms the entire time when having anal intercourse?

- Yes (skip to question 16) No

15b. if No, how many times have you had **anal** sex with your regular partner(s) in the past 3 months? _____

15c. How many of these times have you used a condom? _____

Casual male partners: last 3 months (if no casual partner in last 3 months skip to question 18)

16. Have you had **anal** sex with CASUAL male partner(s) in the past 3 months? Yes No (Skip to question 18)

17. In the past 3 months when having sex with your CASUAL male partner(s) have you used condoms the entire time when having anal intercourse? Yes (skip to question 18) No

17b. if No, how many times have you had **anal** sex with casual partner(s) in the past 3 months? _____

17c. How many of these times have you used a condom? _____

Recent sexual partners

*The following questions are about the last time you had **anal** sex*

Remembering your **last** sexual partner you had **anal** sex with:

18a. Was it with a Regular or Casual partner?

- Regular Casual

18b. Was a condom used the entire time during anal sex?

- Yes No

18c. Do you know the result of his last HIV antibody test? (*tick one*)

- Yes he is positive Yes he is negative He hasn't had a test
 I don't know

The following questions are about your second most recent sexual partner (i.e. the partner before your most recent sexual partner)

Remembering the **last time** you had **anal** sex with your second most recent sexual partner:

19a. Was it with a Regular or Casual partner?

- Regular Casual

19b. Was a condom used the entire time during anal sex?

- Yes No

19c. Do you know the result of his last HIV antibody test? (tick one)

- Yes he is positive Yes he is negative He hasn't had a test
 I don't know

Section E: Personal Characteristics involved in sex

20a. Here is a list of some of the skills involved in negotiating safe sex with casual partners:

Capacity to assert yourself, Knowledge of safe sex practices, Capacity to negotiate safe sex, Capacity to say no under pressure.

In the past **3 months**, have you used these skills to increase your safety during sex? Always Usually Sometimes Never

20b. Do you believe anti-retroviral therapy (HIV treatment) has reduced your risk of catching or transmitting HIV?

- Yes No Don't Know

21. Sexual Sensation Seeking & Compulsivity Scales

Please indicate the extent of your agreement to the following statements by circling one response on the scale from 1 to 4:

- 1 = Not at all like me 2 = A little like me
3 = Like me 4 = Very much like me

- a. I like wild "uninhibited" sexual encounters. 1 2 3 4
b. The physical sensations are the most important thing about having sex. 1 2 3 4
c. I enjoy the sensation of intercourse without a condom. 1 2 3 4
d. My sexual partners probably think I am a "risk taker". 1 2 3 4
e. When it comes to sex, physical attraction is more important to me than how well I know the person. 1 2 3 4
f. I enjoy the company of "sensual" people. 1 2 3 4
g. I enjoy watching "X-rated" videos. 1 2 3 4
h. I have said things that were not exactly true to get a person to have sex with me. 1 2 3 4
i. I am interested in trying out new sexual experiences. 1 2 3 4
j. I feel like exploring my sexuality. 1 2 3 4
k. I like to have new and exciting sexual experiences and sensations sensations. 1 2 3 4
a. My sexual appetite has gotten in the way of my relationships. 1 2 3 4
b. My sexual thoughts & behaviours are causing problems in my life. 1 2 3 4
c. My desires to have sex have disrupted my daily life. 1 2 3 4
d. I sometimes fail to meet my commitments & responsibilities because of my sexual behaviour. 1 2 3 4
e. I sometimes get so horny I could loose control. 1 2 3 4
f. I find myself thinking about sex while at work. 1 2 3 4
g. I feel that my sexual thoughts & feelings are stronger than I am. 1 2 3 4
h. I have to struggle to control my sexual thoughts & behaviour. 1 2 3 4
i. I think about sex more than I would like to. 1 2 3 4
j. It has been difficult for me to find sex partners who desire having sex as much as I do. 1 2 3 4

22. Condom use self efficacy - please tick a box for each question

- a. It's hard to always use condoms
 Disagree Strongly Disagree Agree Strongly Agree
- b. Safer sex is hard when you're really turned on to someone
 Disagree Strongly Disagree Agree Strongly Agree
- c. It's hard to use condoms if you feel you really know someone
 Disagree Strongly Disagree Agree Strongly Agree

Section F: General Personality Characteristics

The following questions are related to your general beliefs, there are no right or wrong answers.

23. Impulsivity Scale

For each statement, please tick "True" (T) or "False" (F)

1. I will often say whatever comes into my head without thinking first. T F
2. I enjoy working out problems slowly and carefully. T F
3. I frequently make appointments without thinking about whether I will be able to keep them. T F
4. I frequently buy things without thinking about whether or not I can really afford them. T F
5. I often make up my mind without taking time to consider the situation from all angles. T F
6. Often, I don't spend enough time thinking over a situation before I act. T F
7. I often get into trouble because I don't think before I act. T F
8. Many times the plans I make don't work out because I haven't gone over them carefully enough in advance. T F
9. I rarely get involved in projects without first considering the potential problems. T F
10. Before making any important decision, I carefully weigh up the pros and cons. T F
11. I am good at careful reasoning. T F
12. I often say and do things without considering the consequences. T F

24. HIV Knowledge Questionnaire

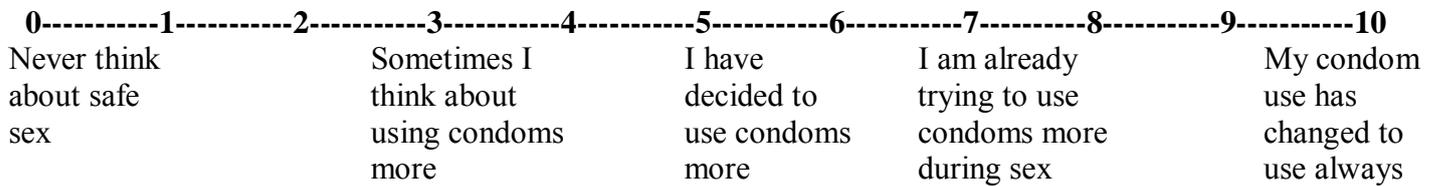
For each statement, please tick "True" (T), "False" (F), or "I don't know" (DK). If you do not know, please do not guess; instead please tick "DK".

1. Coughing and sneezing DO NOT spread HIV T F DK
2. A person can get HIV by sharing a glass of water with someone who has HIV. T F DK
3. Pulling out the penis before a man climaxes/cums keeps a woman from getting HIV during sex. T F DK
4. A woman can get HIV if she has anal sex with a man. T F DK
5. Showering, or washing one's genitals/private parts, after sex keeps a person from getting HIV. T F DK
6. All pregnant women infected with HIV will have babies born with AIDS. T F DK
7. People who have been infected with HIV quickly show serious signs of being infected. T F DK
8. There is a vaccine that can stop adults from getting HIV.

9. People are likely to get HIV by deep kissing, putting their tongue in their partner's mouth, if their partner has HIV. T F DK
10. A woman cannot get HIV if she has sex during her period. T F DK
11. There is a female condom that can help decrease a woman's chance of getting HIV. T F DK
12. A natural skin condom works better against HIV than does a latex condom. T F DK
13. A person will NOT get HIV if she or he is taking antibiotics. T F DK
14. Having sex with more than one partner can increase a person's chance of being infected with HIV. T F DK
15. Taking a test for HIV one week after having sex will tell a person if she or he has HIV. T F DK

16. A person can get HIV by sitting in a hot tub or a swimming pool with a person who has HIV. T F DK
17. A person can get HIV from oral sex. T F DK
18. Using Vaseline or baby oil with condoms lowers the chance of getting HIV. T F DK

25. Readiness Ruler - On the ruler below, please circle the number that best describes how you feel *right now*:



Appendix E

The pattern matrix for each of the substances use is presented in Table 4.4.

Table 4.4.

Pattern Matrix for Illicit Substance Use

Variables	Components	
	1	2
Ecstasy	.878	
Speed	.866	
Cocaine	.798	
Crystal/Ice	.753	
Marijuana	.719	
Amyl/Poppers	.601	-.444
Heroin	.355	.843

Note. Rotation Method: Oblique with Kaiser Normalization.

Appendix F:

Motivational Interviewing for Sexual Risk Reduction Therapist Manual

The MI intervention should be delivered over a total of two therapy sessions (including one booster session). The initial session should be approximately 30-45 minutes in length and a 15 minute telephone 'booster' appointment which will occur one month after the initial session.

Ideally, the timing and physical location of the therapy sessions should be as consistent as possible. Although an immediate session is preferable, there will be occasions when clients cannot attend their appointment. In this case, an attempt should be made to reschedule for the same week. If this is not possible, the session should be made within two weeks of recruitment.

Motivational Interviewing Intervention

Motivational Interviewing Session 1

- Engagement & building motivation for change
- Feedback from assessment and set agenda
- Setting goals for session (if more than 1 target behaviour identified)
- Decisional Balance strategy
- Importance/Confidence Ruler
- Strategies for raising score
- Negotiate goal or action plan for follow-up session
- 'Prescription for prevention' and hand to client

Booster Session – Monitor & Congratulate! (Telephone appointment)

- Explore and Reinforce progress towards goal
- If 100% behaviour change, explore relapse prevention and confidence of maintaining behaviour change
- If not, identify barriers, renegotiate new goals
- Review strategies for coping with relapse

SESSION 1 – Feedback from assessment and initial goal setting

Detailed Intervention

Present the rationale for treatment

An example of the presentation of the intervention rationale:

“Before we begin, let me just explain a little about how we will be working together. This is the first of 2 sessions that we will be spending together. I hope that you will find these interesting and helpful. You have already spent time completing the assessment, and I appreciate the effort you put into that process.”

I should also explain right up front that I'm not going to be changing you. I hope that I can help you think about your present situation and consider what, if anything, you might want to do, but if there is any changing, you will be the one who does it. I couldn't change you if I wanted to. The only person who can decide whether and how you change is you. How does that sound to you?"

Begin by asking generally about the client's lifestyle:

"Perhaps we can spend a few minutes with you telling me about a typical day in your life, so that I can understand in more detail what happens, and how your sexual health and behaviour fits in with this? Tell me a bit more about the things you struggled with and how you felt at the time".

Allow the person to continue with as little interruption as possible. If necessary prompt with open-ended questions: *"What happened then?"* Review and summarise. If necessary, ask: *"Is there anything else at all about this picture you have painted that you would like to tell me?"*

If the person does not volunteer information about particular issues of interest, ask the following: *"Can you tell me where your sexual behaviour fits in?"*

The therapist could ask the following to explore the person's beliefs about their current lifestyle: e.g. *"How does your sexual behaviour affect your mood /relationships/ well-being?"*

The aim is to elicit self-motivational statements from the client about the arguments for change (Miller & Rollnick, 1991). Depending on the person's response to this discussion, it may be appropriate to commence a more formal assessment of the good and less good things about the client's current lifestyle with a view to tipping the person's thoughts in favour of making a change. Use the following exercise.

Exercise: Decisional Balance (Miller & Rollnick, 1991)

The decisional balance sheet is an important tool for addressing a persons' motivation to address unhealthy lifestyle habits. Many clients may be ambivalent about addressing their condom use or substance use. Despite this, they may be aware that there are down sides to their current behaviours. Ambivalence is a normal experience. However, it becomes problematic when people become stuck after which problems usually persist and intensify. For example, the therapist and client are weighing up whether he should continue risky sex or reduce/abstain. The benefits of continuing to have unprotected sex may be because it feels good and/or as a sign of intimacy, while the costs associated include potential damage to health of self and others. Try to elicit self-motivational statements from the client. Start with the statement: *"So, perhaps there are some good things and some less good things about your current condom use/number of partners. Can we look at this a little more closely?"*

Ask the client to write down all the positives they associate with their current sexual behaviour in the relevant quadrant of the grid. Use the following questions as a prompt: *"Tell me about your sexual behaviour. What do you like about it? And what's the other side? What are the less good things about unprotected sex?"* If necessary, prompt further: *"I wonder how you feel about unprotected sex? What can you imagine happening to you?"* Also prompt for the client's thoughts about numbers of casual

partners and substance use in the same way. Avoid the use of terms such as “problem”, “bad” etc. as these can elicit resistance from the client at this early stage.

Assessing Importance and Confidence: Enhancing Motivation to Change

Following completion of the decisional balance activity, make an assessment of the client’s readiness to change their current lifestyle activities. Ask the client to rate the importance of making a change: “*How IMPORTANT is this to you personally? If ‘0’ was ‘not important’ and ‘10’ was ‘very important’ what number would you give the importance of making this change?*” Write the client’s importance rating next to the relevant aspect.

Then explore the importance of making a change by asking “*Why are you not a 1?*” (not why are you not a 10? as this question leads to greater resistance). If the importance of making a change is:

- Low - Medium: “*I’m wondering, why did you say a “4” and not a “1”? So, one reason its important is... what else?*”
- High: “*So, its very important for you to do something about your sexual health. Why is that? So, one reason its important is... what else?*”

Explore confidence for change “*On a scale of 1-10 how confident are you that you could make a change in your condom use/ number of casual partners/ substance use if you wanted to?*”

Negotiating a plan for change – goal setting

Once it is apparent that the client is prepared to take some action in changing their behaviour, it is important to set some clear goals for this change. Miller and Rollnick (1991) explain that motivation is driven by an inconsistency between a person’s goals and their current state. Ideally, the client will see that several aspects of their lifestyle (sexual behaviour, number of partners, substance use) can be worked on simultaneously, with goals established for each.

Talk through the characteristics of good, realistic goals with the client.

- Goals will help regardless of whether they are achieved. Goals the client reaches can be celebrated/rewarded, but others that aren’t achieved can be used as learning experiences.
- Goals need to be concrete, specific and realistically achievable. For example, the goal of “*always safe sex*” is not as specific or concrete as “*I will stop unprotected sex completely by XXX date.*”
- The client needs to choose his own goal(s), it is not for the therapist to “impose” ones standards on their change process. While 100% condom use may be the therapists desired goal, this prospect may be overwhelming for a client to contemplate. It is far more important to maintain rapport and a good working alliance with the client, and to start with goals that he is motivated to achieve (Miller & Rollnick, 1991).

Clients unwilling to discuss immediate and long-term 100% condom use might be more responsive to a short-term (trial) period (“a holiday from risky sex”). Miller & Rollnick (1991) describe the following alternatives to immediate abstinence:

1. Negotiate a period of trial condom use;
2. Commence a process of gradual tapering down toward 100% condom use; or
3. Commence a period of trial moderation. Moderation may be an appropriate goal to start with, even though 100% condom use may be the longer-term outcome.

Once the client chooses a goal to work towards, it is important to explore any barriers or problems the client can forecast that may potentially impact on the achievement of their goals. Ask the client to articulate these concerns by using some of the following questions (Miller & Rollnick, 1991):

“You have said that you would like to always have safe sex/cut down number of partners/substance use, so let’s make that a goal. What can you think of the might go wrong with this plan? What might be good, and what might be not so good about reaching this goal?”

Or... *“You have said that you would like to decrease your alcohol intake so let’s make that a goal. What can you think of the might go wrong with this plan? What might be good, and what might be not so good about reaching this goal?”*

Negotiate a goal or action plan with the client for the next session. Allow the patient to choose a goal that is realistic and attainable in the context of his/her life. Final step: Record the goal or action plan on the *Prevention Prescription Pad* and give the “behavioral prescription” to the client.

Booster Session – Monitor & Congratulate! (Telephone appointment)

- Explore and Reinforce progress towards goal
- If 100% behaviour change, explore relapse prevention and confidence of maintaining behaviour change
- If not, identify barriers, renegotiate new goals
- Review strategies for coping with relapse

Appendix G: Additional Results

6.3 Additional Results and Discussion

As the reliability of the HIV Knowledge questionnaire was surprisingly low ($\alpha = 0.63$), further exploration of participant responses was warranted. Table 7.4 displays the percent of correct responses for each item on the HIV Knowledge questionnaire.

Table 7.4.

Percent of Correct Response for Each Item on the HIV Knowledge Questionnaire

Item	% (n)
1. Coughing and sneezing do not spread HIV	80.4 (193)
2. A person can get HIV by sharing a glass of water with someone who has HIV	93.3 (224)
3. Pulling out the penis before a man climaxes/cums keeps a woman from getting HIV during sex	85 (204)
4. A woman can get HIV if she has anal sex with a man	88.8 (213)
5. Showering or washing one's genital/private parts, after sex keeps a person from getting HIV	88.8 (213)
6. All pregnant women infected with HIV will have babies born with AIDS	56.3 (135)
7. People who have been infected with HIV quickly show serious signs of being infected	88.3 (212)
8. There is a vaccine that can stop adults from getting HIV	88.3 (212)
9. People are likely to get HIV by deep kissing, putting their tongue in their partner's mouth, if their partner has HIV	82.5 (198)
10. A woman cannot get HIV if she has sex during her Period	80.8 (194)
11. There is a female condom that can help decrease a woman's chance of getting HIV	44.6 (107)

12. A natural skin condom works better against HIV than does a latex condom	47.5 (114)
13. A person will NOT get HIV if she or he is taking Antibiotics	89.2 (214)
14. Having sex with more than one partner can increase a person's chance of being infected with HIV	92.1 (221)
15. Taking a test for HIV one week after having sex will tell a person if she or he has HIV	81.7 (196)
16. A person can get HIV by sitting in a hot tub or a swimming pool with a person who has HIV	90.4 (217)
17. A person can get HIV from oral sex	60.8 (146)
18. Using Vaseline or baby oil with condoms lowers the chance of getting HIV	81.7 (196)

As indicated in Table 6.4, items 6, 11, 12 and 17 had the lowest percentage of correct responses. Items 6 and 11 were specific questions relating to HIV transmission in women, item 12 related to skin or latex condoms, and item 17 questioned the risk of HIV transmission through oral sex. HIV knowledge scores were not associated with sexual risk behaviour at the univariate or multivariate level.

It could be argued that health promotion campaigns directed towards MSM have focused on MSM specific content, and that the low scores in relation to HIV transmission in women are not problematic. Counter to this, it could be argued that 100% correct knowledge is important for HIV prevention. The 39% of participants incorrectly answering item 17 (risk related to oral sex) and the 18% believing Vaseline or baby oil lowers the risk of HIV (item 18) is concerning and should be an area for health promotion.