THE RELATIONSHIP AMONG IMPULSIVITY, SUBSTANCE USE, AND

CONDOM USE IN A SAMPLE OF MEN WHO HAVE SEX WITH MEN

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ABSTRACT

The relationship among impulsivity, substance use, and condom use in a sample

of men who have sex with men

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The purpose of the study is to examine the association between impulsivity, substance use, and condom use in men who have sex with men. Specifically, this study assessed whether self-reported substance use and impulsivity measures predict condom use in men who reportedly engage in sex with other men. This study, also explored the interrelations among impulsivity measures including behavioral and paper-and-pencil assessments and identified, the possible underlying dimensions of impulsivity tapped by these measures Results did not demonstrate a significant relationship between substance use and high risk sexual behavior. There was however a significant correlation between risky sexual behaviors and alcohol consumption.   Limitations of the study and future directions for multiculturally competent health psychology research are explored.

DEDICATION

I would like to dedicate this paper to my family. Specifically, to my husband Danny Matos; my parents Carmen Castro and Felipe Fuentes; my sister Sandra Fuentes; and my extra set of parents Rudy and Socorro Amaro. In addition, my teacher and guru Dr Aury Moya who has helped me find both my voice and my vocation.

ACKNOWLEDGMENTS

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CHAPTER 1

THE PROBLEM

Statement of the Problem

Approximately 36.1 million people worldwide are currently living with HIV/AIDS, a number more than 50% larger than projected statistics from the World Health Organization's 1991 Global Program on AIDS (World Health Organization, 2000). In the United States alone, 886,575 people have been diagnosed with AIDS (Center for Disease Control Epidemiological Update, 2004). In addition, other estimates suggest that at least 40,000 new HIV infections occur each year in the United States alone (Center for Disease Control and Prevention, 2000).

Behavioral research has focused directly on changing the behaviors associated with HIV risk (e.g., unprotected sexual intercourse). Data from these studies have revealed several factors that can act as barriers to sexual behavior change. For example, empirical data indicate a strong association between substance use and risky sexual behavior (e.g., Kalichman, Tannenbaum, & Nachimson, 1998; Petry, 2000; 2001; Schafer, Blanchard, & Fals-Stewart, 1994). According to Petry (2000), one possible explanation for the co-morbidity of these behaviors is that they represent an underlying factor such as

impulsivity. Indeed, research data provide support for a link between some measures of impulsivity and risky sexual behavior (Hoyle, Feijar, & Miller, 2000; Kahn, Kaplowitz, Goodman, & Emans, 2002; Malow, Devieux, Jennings, Lucenko, & Kalichman, 2001; Pack, Crosby, St. Lawrence, 2001; Semple, Patterson, & Grant, 2000; Zuckerman & Kuhlman, 2000).

Purpose of the Study

The primary purpose of this study is to examine the association between impulsivity, substance use, and condom use in men who have sex with men. Specifically, this study assessed whether self-reported substance use and impulsivity measures predict condom use in men who reportedly engage in sex with other men. This study, also explored the interrelations among impulsivity measures including behavioral and paper-and-pencil assessments and identified, the possible underlying dimensions of impulsivity tapped by these measures.

Research Questions, Hypotheses, and Rationale

The primary research question examined by this dissertation is: What is the association between condom usage

and both impulsivity/risk-taking and substance use among men who have sex with men?

The contribution of substance use scores and impulsivity measures to the prediction of condom use will be examined. This hypothesis is based on research data that suggest risky sexual behavior is associated with substance use and impulsivity and that some measures of impulsivity predict condom use (e.g., Hoyle et al., 2000; Kalichman et al., 1998; Malow et al., 2001; Petry, 2000; Schafer et al., 1994).

A secondary research question is: What are the interrelations among the different dimensions of impulsivity in this population?

The relations of the different measures of impulsivity were examined. The rationale for this effort is based on research data that various measures of impulsivity are not correlated with each other and may assess different underlying dimensions of impulsivity (e.g., Lejuez et al., 2002; Petry, 2001; White et al., 1994).

Theoretical Perspective

In previous research of risky sexual behavior, impulsivity has been treated as a unitary trait. For example, studies have focused on the relationhip between scores on personality indices of impulsivity and sexual risk-taking behavior (Hoyle et al., 2000; Kahn et al., 2002; Kalichman et al., 1998; Malow et al., 2001; Pack et al., 2001; Semple et al., 2000; Zuckerman & Kuhlman, 2000). According to personality theorists, impulsivity is a stable and pervasive pattern of interaction with the environment derived from genetic characteristics and individual learning histories (Eysenck & Eysenck, 1977; 1978). Thus, researchers have developed various instruments to measure this trait (e.g., Eysenck Impulsivity Scale, Zuckerman Sensation Seeking Scale).

However, research examining the correlation between impulsivity and other maladaptive behaviors (e.g., substance use, delinquency, gambling) has demonstrated that impulsivity is more likely a multidimensional construct with behavioral, cognitive, and affective components (Lejuez et al., 2002; Mitchell, 1999; Petry, 2001; White, Moffitt, Caspi, Bartusch, Needles, & Stouthamer-Loeber, 1994). Behavioral components of

impulsivity include preference for smaller, immediate rewards to larger, delayed rewards and increased risk taking characterized by sensitivity to reward and insensitivity to punishment (Lejuez et al., 2002; Petry, 2001; Rachlin & Green, 1972; White et al., 1994).

Cognitive components of impulsivity include present time orientation and poor planning skills (Petry, 2001; Rothspan & Read, 1996; White et al., 1994). Affective components of impulsivity include boredom proneness and sensation seeking (Petry, 2001; Zuckerman, Eysenck, & Eysenck, 1978). The relationship of these individual dimensions of impulsivity to risky sexual behavior is not well established. In fact, poor operational definition and measurement of the construct of impulsivity has limited the usefulness of data from previous research on the relation between impulsivity and risky sexual behavior.

This study assessed whether self-reported substance use and various impulsivity measures predict condom use in men who reportedly engage in sex with other men from all three theoretical perspectives (behavioral, cognitive, and personality). In addition, this study also explored the

interrelations among the various impulsivity measures and sought to identify possible underlying dimensions of impulsivity tapped by these measures.

Definition of Terms

Impulsivity – according to Gerbing, Ahadi and Patton (1987), impulsivity is defined as human behavior without adequate thought, the tendency to act with less forethought than do most individuals of equal ability and knowledge, or a predisposition toward rapid, unplanned reactions to internal or external stimuli without regard to the negative consequences of these reactions.

Human Immunodeficiency Virus (HIV) - is the virus that causes AIDS. This virus may be passed from one person to another when infected blood, semen, or vaginal secretions come in contact with an uninfected person's broken skin or mucous membranes. In addition, an infected pregnant woman can pass HIV to their baby during pregnancy or delivery, as well as through breast-feeding. People with HIV have what is called HIV infection. Some of these people will develop AIDS as a result of their HIV infection. (Centers for Disease Control, 2007).

AIDS (Acquired Immunodeficiency Syndrome) – According to the Centers for Disease Control (2007) the term is defined as:

> *Acquired* – "means that the disease is not hereditary but develops after birth from contact with a disease-causing agent (in this case, HIV.

> *Immunodeficiency* – means that the disease is characterized by a weakening of the immune system.

> *Syndrome* – refers to a group of symptoms that collectively indicate or characterize a disease. In the case of AIDS this can include the development of certain infections and/or cancers, as well as a decrease in the number of certain cells in a person's immune system.

> A diagnosis of AIDS is made by a physician using specific clinical or laboratory standards.

Men who have sex with men (MSM) – Public health professionals coined the term *MSM* in the mid 1980s to describe **men** who had **sex** with other **men**, regardless of their sexual orientation (Williams, Wyatt, & Resell, 2004).

Gay men – men who exclusively engage in sex with other men and publicly identify as such.

Risky sexual behavior - any sexual behavior that involves the exchange of body fluids and thus places the person at risk for contracting a sexually transmitted disease including, but not limited to, HIV. HIV transmission can occur when blood, semen (cum), pre-seminal fluid (pre-cum), vaginal fluid, or breast milk from an infected person enters the body of an uninfected person. HIV can enter the body through a vein (e.g., injection drug use), the lining of the anus or rectum, the lining of the vagina and/or cervix, the opening to the penis, the mouth, other mucous membranes (e.g., eyes or inside of the nose), or cuts and sores. Intact, healthy skin is an excellent barrier against HIV and other viruses and bacteria.

These are the most common ways that HIV is transmitted from one person to another: by having unprotected sex (anal, vaginal, or oral) with an HIV-infected person; by sharing needles or injection equipment with an injection drug user who is infected with HIV.

Substance abuse - The excessive use of a substance, especially alcohol or a drug. (There is no universally accepted definition of substance abuse.)

Significance of the Study

As stated previously, there is no known cure for AIDS and no vaccine has proven effective in humans (Kalichman, 1998;

Wingood & DiClemente, 1996). Therefore, prevention, by helping people change behaviors that could lead to infection, is the only method to reduce the transmission of HIV. Unfortunately, though highly targeted educational and prevention efforts designed to reduce risky sexual behavior among gay and bisexual men were initially successful (Centers for Disease Control and Prevention, 2000; Wingood & DiClemente, 1995.), emerging evidence points to an increasing trend of unprotected anal intercourse among men who have sex with men (Crossley, 2001; Katz, Schwarcz, Kellogg, Klausner, Dilley, Gibson, & McFarland, 2002). In light of this evidence, educators and researchers assert that the current educational methods of educating people about mechanisms of HIV infection are inadequate as means of effecting behavioral change (e.g., Kelly, 1995). Therefore, educational efforts need to include functional assessment of the behavior components of unprotected sexual intercourse. This study aims to increase our understanding of the specific components underlying unprotected sexual intercourse between men. This understanding will create more effective educational interventions for reducing high risk behaviors in the MSM populations.

CHAPTER 2

LITERATURE REVIEW

This chapter will discuss the relationship between substance use and risky sexual behavior in the context of a common underlying risk factor: impulsivity. An overview of the multiple theoretical and operational definitions of impulsivity and related constructs will also be provided.

Substance Use and Risky Sexual Behavior
Co-morbidity

Empirical evidence indicates that the use of drugs is strongly correlated with risky sexual behavior (e.g., Booth, Kwiatkowski, & Chitwood, 2000; Compton, 2000; El-Bassel & Schilling, 1992; Hoffman, Klein, Eber, & Crosby, 2000; Williams et al, 2000). For instance, in a sample of 495 African American crack cocaine users, the use of alcohol and crack cocaine was related to increased sexual risk behavior (Rasch et al, 2000). In addition, alcohol and marijuana use among 374 university students predicted unsafe sexual practices with increased risk of contracting HIV (Cerwonka,

Isbell, & Hansen, 2000).   In another study, ecstasy users (*N* = 213) between the ages of 15 and 46 were interviewed. They reported using condoms less often when intoxicated than while sober (Topp, Hando, & Dillon, 1999). In addition, Malow et al. (2001) assessed sexual behavior and substance abuse in 169 adolescents. Results indicated that marijuana use was associated significantly with sexual activity and alcohol use was associated with multiple sexual partners.

Moreover, risky sexual behavior among adult cocaine and opiate users is high. Bowen and Trotter (1995) reported that "although 91% of intravenous cocaine and opiate users were sexually active, 70% never used condoms and only 10% used them at least 50% of the time" (p. 238). Substance use is also associated with decreased condom use. In a randomly selected sample (*N* = 725) of the general population (culled from a probability sample of the adult household population within the United States), drug use was associated with a decreased likelihood of condom use with a new sexual partner (Schafer et al., 1994). In conclusion, substance abuse is associated with higher rates of risky sexual behavior across different populations.

Prevalence of Substance Abuse in

Gay and Bisexual Men

Before the etiology of HIV was known, physicians and medical researchers in the United States and Europe hypothesized that gay and bisexual men were at particular risk to contract and transmit the virus due to the disproportionately high rate of substance abuse in that population (Garrett, 1994). Specifically, they theorized that the opportunistic infections associated with HIV/AIDS were a result of an immune system overtaxed by substance abuse as data suggest that drugs may contribute to infection by decreasing inmmunoresponse.

Once it was established in the scientific community that substance abuse did not *cause* HIV/AIDS, care providers and researchers alike began to speculate on the exact nature of the association between HIV status and substance abuse. For example, Kelly (1995) points out:

> Beginning in the 1970s and continuing into the late 1980s, the use of inhaled nitrites (also called poppers, rush, amyl, or butyl) became popular especially among gay men and particularly in immediate conjunction with sex…The sexual arousal properties of inhaled nitrites led to their frequent use during sex, and perhaps because of the mild anesthetic effects, nitrite use was especially

common among men who engaged in unprotected anal intercourse. (pp. 90-91)

Kalichman et al., (1998) cite data from the Multicenter AIDS Cohort Study indicating that the use of alcohol and nitrite inhalants predicted unprotected anal intercourse and number of sexual partners among men who had sex with men. Stall, McKusick, Wiley, Coates, and Ostrow (1986) conducted a three-year prospective study of the changes in sexual behavior made by gay men in San Francisco in response to the AIDS epidemic. These researchers surveyed a wide range of gay men including 400 who frequented bathhouses, 400 who frequented bars, 250 who frequented neither, and 500 who were involved in committed relationships. Results from this study indicated that use of specific drugs during sex, number of drugs used during sex, and frequency of combining drugs and sex were positively correlated with risky sexual behavior across all categories of participants surveyed.

Pharmacological, Physiological, and Psychological Explanations

Researchers postulate that there are several reasons for the strong association between substance use and risky sexual

behavior. Schafer et al. (1994) point out that "Alcohol and drug use have been hypothesized to affect HIV transmission by clouding judgment, disinhibiting the user, and decreasing pain sensitivity during intercourse…thus serving to increase the probability of risky sexual behavior occurring" (p. 3).

For example, some substances have pharmacological effects that facilitate certain sexual behaviors. The use of nitrite inhalers results in slight anesthesia caused by rapid but brief vasodilation and the relaxation of anal musculature, which increases the ease of anal intercourse (Kalichman et al., 1998; Kelly, 1995). Also, the use of other substances like cocaine and alcohol is associated with physiological effects such as heightened sexual arousal and behavioral disinhibition. Kalichman (1998) points out that the use of crack cocaine is intimately tied to HIV risk because of the sexual behaviors and contexts directly related to the use of this drug. Specifically, cocaine is associated with heightened sexual pleasure and erotic intensity, and crack cocaine users often barter sex in exchange for drugs or money (Kelly, 1995).

In addition to their pharmacological and physiological effects, substances are also associated with psychological factors such as attributions and outcome expectancies that can affect sexual behavior (Kalichman et al., 1998; Stall et al., 1986). In other words, people's beliefs and expectancies about the effects of substance use in relation to sex often mediate the incentive for combining substance use with sexual activity (e.g., one may believe that consumption of alcohol leads to a greater degree of social comfort, sexual arousal, and behavioral disinhibition and be more likely to use alcohol in situations where such anticipated outcomes would be desirable). These attributions and outcome expectancies are deeply embedded in cultural contexts and consistently reinforced by the ever-present connection between sex and substance use in the media and other forms of popular culture (Kalichman et al., 1998).

Other Factors Common to Substance Use
and Risky Sexual Behavior

While there are compelling pharmacological, physiological, and psychological explanations for the

association between substance use and risky sexual behavior, some researchers theorize that the co-morbidity of these behaviors can be explained, in part, by the fact that they are different expressions of a common underlying factor. For example, one such factor might involve the conflict in contingencies of reinforcement for both behaviors. In other words, the short-term consequences of engaging in a specific behavior (e.g., condom use) can be immediately less unpleasant then the long-term consequences (e.g., testing positive for HIV); this is called hyperbolic discounting and will be thoroughly examined later on the text.

Indeed, research conducted by Williams et al. (2000) to examine the determinants of condom use among African Americans who smoke crack cocaine found that participants reported negative experiences with condom use along three different dimensions: reduction of pleasure, unnaturalness, and stigmatization. Thus participants reported forgoing the possible long-term consequences of their sexual behavior, getting infected with HIV, in order to avoid the short-term negative experience of using a condom.

Substance use is also associated with conflicting short and long-term consequences. Specifically, Petry (2000) points out that: "The choice to use drugs may produce immediate pleasurable sensations or excitement. The long-term effects associated with substance abuse may include loss of employment, family, legal difficulties and substantial debt" (p. 1089). Therefore the long-term negative consequences (family, employment, etc.) are discounted for the short-term pleasure of the immediate drug reward.

As noted above, engaging in certain high-risk behaviors can have strong and immediate reinforcing effects. For example, Kelly and Kalichman (1998) assessed the subjective reinforcement value of unprotected anal intercourse in predicting levels of condom use among 297 gay and bisexual men. Participants were asked to rate the pleasure they derived from insertive and receptive anal intercourse without a condom on a 5-point Likert scale. The effects of other variables known to be associated with the adoption of safer sex behavior (HIV risk knowledge, behavioral intentions, condom attitudes, perceived vulnerability to HIV, and sexual communication skills) were also examined. In addition, participants' use of

alcohol and drugs (marijuana, cocaine, and nitrite inhalant) before engaging in sexual activity was measured. Data from this study indicated that the reinforcement value of unprotected anal intercourse and substance use before sex were the strongest predictors of continued high-risk sexual behavior. Kelly and Kalichman (1998) note that: "Although condom use intentions, positive condom attitudes, perceived vulnerability to AIDS, risk knowledge, and sexual communication skills influence the adoption of safer sex, continued risky sexual behavior might occur if the reinforcement value of unprotected anal intercourse overrides inclinations to use condoms" (p. 329).

While certain individuals may have the knowledge, skills, and intentions necessary to enact behavioral change to protect their long-term interests, the short-term reinforcing effects of risky behavior may exert more influence at the moment when the individual actually engages in substance use and/or sexual intercourse. Therefore, an essential issue involved in changing people's sexual and substance use behavior is the degree to which individuals choose to forgo smaller rewards in the present for larger rewards in the future.

Rachlin (1978) defines the choice of a less desirable outcome in the present in order to gain a larger reward in the future as "self-control;" whereas Petry (2000), defines the choice of behaviors that provide immediate reinforcing effects and result in long-term negative consequences as "impulsivity." Petry (2000) also notes that research data provide support for an association between high scores on personality scales measuring impulsivity and a greater number of sexual partners, increased incidence of non-use of condoms, and greater likelihood of engaging in sex with prostitutes. For example, a study conducted by Schafer et al. (1994) indicated that those participants who scored significantly higher on a scale assessing characteristic impulsivity were more likely to use drugs and not use condoms.

According to Petry's (2000) definition, impulsivity is characterized by preferences for more immediate rewards when there is a choice between conflicting contingencies of reinforcement. This definition of impulsivity also seems to characterize substance use and risky sexual behavior and may explain some of the co-morbidity of these behaviors. Indeed, it is possible that risky sexual behavior is simply one

expression of a larger factor, impulsivity. Furthermore, some research data indicate that impulsivity is not a unitary trait but a multidimensional construct with behavioral, cognitive, and affective components (Lejuez et al., 2002; Mitchell, 1999; Petry, 2001; White et al., 1994). An overview of relevant research regarding the behavioral, cognitive, and affective components of impulsivity will be provided in the following sections of this chapter.

Behavioral Components of Impulsivity

Temporal Discounting

As stated previously, the preference for smaller, immediate rewards over larger, delayed rewards is an important behavioral component of impulsivity. This component of impulsivity is theoretically and operationally similar to Rachlin's notion of self-control. As Rachlin (1978) explains: "The difference between someone who is controlling himself and someone who is not controlling himself is, thus, not in the spatial locus of control (from inside versus outside his skin) as the term 'self-control' seems to imply, but in the temporal locus: how far away from the present must we look to find the

source of control" (p. 247). In order to distinguish between people who act impulsively and those who do not, it is necessary first to understand how people make choices between competing behavioral options and consequences (e.g., short-term versus long-term rewards). The phenomenon of *temporal discounting* provides an explanation for how people make such choices.

One model of human behavior, utility theory, asserts that humans are rational beings who strive to maximize their personal rewards. When rewards are delayed, utility theorists posit that people discount delayed rewards by subtracting a constant proportion of the value there would be at any given delay for every additional unit of delay (Ainslie, 2001). According to this model, people should consistently prefer larger rewards to smaller ones, and delayed rewards should be discounted in a consistent and rational manner.

However, research data suggest that humans do not simply value rewards in proportion to their size, nor do they discount delayed rewards in a consistent or rational way. Instead, humans have the tendency to devalue future rewards in proportion to their delay, and this discounting preference

takes the shape of a hyperbolic curve (Ainslie, 2001; Laibson, 1997; Madden, Bickel, & Jacobs, 1999; Petry, 2001; Petry & Casarella, 1999). For example, temporal or hyperbolic discounting predicts that a cocaine abuser will choose to abstain from using cocaine when the drug is not immediately available in order to enjoy the benefits of abstinence and avoid the harmful consequences of drug use. However, when the drug is immediately available, the rewards of sustained abstinence and the future costs of cocaine use are discounted to the extent that the value of the immediate rewards of cocaine use is greater.

Indeed, according to Ainslie (2001), the timing of rewards is the key factor in determining human preference: "people in experiments do things like choosing a shorter period of relief from noxious noise over a longer but later period of relief from the same noise if and only if the shorter, earlier period is imminent" (p. 30). Thus, hyperbolic discounting explains the apparent irrationality of self-defeating behaviors such as unprotected anal intercourse by demonstrating how smaller rewards in the present (e.g.,

increased physical sensitivity) are more reinforcing than larger rewards in the future (e.g., testing negative for HIV).

While hyperbolic discounting is a behavior common to all humans, specific groups of people tend to discount the value of delayed rewards at a higher rate than others (Kirby, Petry, & Bickel, 1999; Madden, Petry, Badger, & Bickel, 1997; Petry, 2001; Vuchinich & Simpson, 1998). For example, Petry and Casarella (1999) conducted a study to compare the discounting behavior of substance abusing problem gamblers, substance abusing non-problem gamblers, and non-problem gambling/non-substance abusing controls. Results indicated that substance abusers discounted delayed rewards at significantly higher rates than non-substance abusers, and substance abusers with co-morbid gambling problems discounted delayed rewards at the highest rate.

Risk-Taking

Risk-taking is another behavioral component of impulsivity, and it is closely related to temporal discounting. According to Lejuez et al. (2002), risk-taking behaviors are defined as "those that involve some potential

for danger or harm while also providing an opportunity to obtain some form of reward" (p. 75). Some researchers hypothesize that risk taking is characterized by sensitivity to reward and insensitivity to punishment. In other words, it is possible that individuals who engage in risk-taking behaviors such as substance use and unprotected sex are less concerned about the risk of personal injury than the potential rewards associated with these behaviors. Lejuez et al. (2002) developed a laboratory-based measure of risk-taking designed specifically to assess participants' sensitivity to reward and insensitivity to punishment. These researchers found that scores on this measure predicted unprotected sexual intercourse and polysubstance use in adolescents.

Cognitive Components of Impulsivity

Present Time Orientation

While temporal discounting involves the degree to which people value immediate rewards as compared to delayed rewards, time orientation refers to the ways in which they divide the flow of their experiences into separate temporal categories of past, present, and future (Zimbardo, Keough, & Boyd, 1997).

According to Zimbardo et al. (1997), "time perspective affects decision making by locating the primary set of psychological influences within the temporal frames of either the present, past, or future" (p. 1008). Wilson and Herrnstein (1985) theorize that present time orientation characterized by a "rapid tempo and shortened time horizons" underlies impulsivity because individuals with this orientation tend to focus on immediate pleasure and consequences when making decisions. In contrast, people with future time orientation tend to base their decisions on anticipated consequences of future scenarios.

Research examining the association between time orientation and behaviors such as risky driving and unprotected sexual intercourse suggests that individuals with present time orientations are more likely to engage in these high risk behaviors than those with future time orientations (Rothspan & Read, 1996; Zimbardo et al., 1997). For example, Rothspan and Read (1996) surveyed 185 college students to assess their time orientation, past sexual behaviors, and concerns about contracting HIV. Data from this study indicated that present time perspective was positively

correlated with number of sexual partners and unprotected sex and that the association between time perspective and sexual behavior was mediated, in part, by concerns about contracting HIV.

Poor Planning Skills

As indicated above, impulsivity is associated with temporal discounting, risk taking, and present time orientation. Conversely, people not characterized as impulsive are those who discount delayed rewards less, are sensitive to punishment as well as reward, and are able to focus on anticipated consequences of imagined future scenarios. It makes intuitive sense that such individuals are fairly well organized and have relatively strong planning skills.

Neuropsychological data indicate that people with deficits in frontal lobe functioning are less able to plan and organize, and therefore may be more prone to impulsive behavior (White et al., 1994). The frontal lobe is known as the seat of executive functions such as abstract reasoning, planning, and organization and damage to this area of the

brain has been associated with impulsive and antisocial behavior (Elliott, 1978; Moffitt and Henry, 1989; Stuss & Benson, 1984).

Research data suggest that impulsive behaviors such as substance abuse and pathological gambling are positively correlated with poor planning skills (Petry, 2001; Vitaro, Arsenault, & Tremblay, 1999,) suggesting a deficit in executive functioning. Thus, it is plausible that poor planning skills are correlated with unprotected sexual intercourse as well. Indeed, Hobfoll, Jackson, Lavin, Britton, and Shepherd (1994) conducted a study to assess an HIV risk reduction intervention with pregnant inner-city women that included training in planning skills (e.g., carrying condoms at all times). According to these researchers, moderate increases in condom use were associated with the intervention planning skills, providing evidence for the link between the planning component of impulsivity and HIV risk.

Affective Components of Impulsivity Boredom

Proneness and Sensation Seeking

In addition to the behavioral and cognitive components outlined above, research data indicate that impulsivity is also characterized by affective components such as boredom proneness and sensation seeking (Petry, 2001; Zuckerman et al., 1978). According to Kalichman, Johnson, Adair, Rompa, Multhauf, and Kelly (1994), sensation seeking is "the propensity to prefer exciting, optimal, and novel stimulation or arousal" (p. 385). In order to achieve such novel and intense affective experiences, sensation seekers often engage in various risky behaviors (e.g., substance use, gambling, unprotected sexual intercourse). Research examining predictive factors for HIV risk suggests that there is an association between some measures of sensation seeking and increased risky sexual behaviors (Horvath & Zuckerman, 1993; Kalichman et al, 1994; Petry, 2000).

Zuckerman et al. (1978) developed a self-report measure of sensation seeking (the Zuckerman Sensation Seeking Scale) in order to provide an operational assessment of the construct of optimal level of stimulation. This construct was first

formulated by Wundt in 1873 to explain the curvilinear

relationship between affective reactions and intensities of

stimulation. In developing their scale, Zuckerman et al.

(1978) theorized that higher sensation seeking scores would be

correlated with higher optimal levels of stimulation and

increased proneness to boredom.

Petry (2001) evaluated the Zuckerman Sensation Seeking

Scale and other self-report and behavioral indices of

impulsivity in substance abusers. Results from the principal

components analysis conducted in this study revealed that

sensation seeking comprised one distinct measure of

impulsivity and explained 23% of the variance in self-report

indices of impulsivity. Given the established association

between substance abuse and risky sexual behavior, it is

reasonable to assume that sensation seeking might also be

correlated with condom use.

Summary and Critique of the

Extant Literature

Current research literature on risky sexual behavior

suggests that it has a strong association with substance use

and is correlated with some measures of impulsivity. Indeed, some researchers theorize that risky sexual behavior and substance abuse are correlated because they are both manifestations of an underlying factor such as impulsivity. Genetic predisposition to sensitivity to reinforcement, which derives from interactional history or sexual reinforcement, contributes to a heightened response to impulsivity. In turn, impulsivity blocks the attention necessary to consider long-term consequences of immediately gratifying behavior. Substance abuse disorder and risky sexual behavior seem to be directly connected to the susceptibility towards impulsivity.

Data from studies examining the association between impulsivity and other maladaptive behaviors such as gambling and delinquency suggest that impulsivity is most likely a multidimensional construct with behavioral, cognitive, and affective components. However, there is little agreement regarding the definition and assessment of impulsivity in the existing research on risky sexual behavior and it is generally treated as a unitary personality trait in these studies. Thus, the relationship between behavioral, cognitive, and affective components of impulsivity and risky sexual behavior is not

well known. Furthermore, inconsistent operational definition

and measurement of impulsivity plague most previous research

on the relation between impulsivity and risky sexual

behavior,therefore limiting the usefulness of data from these

studies.

CHAPTER 3

METHODS

Research Design

    This study examined whether substance use and measures of impulsivity, including a computerized behavioral measure, predict condom use in men who reportedly engage in sex with other men. In order to assess the relationship between the independent and dependent variables, four predictor variables (substance use, scores on impulsivity scales, risk-taking, and temporal discounting) were assessed. Correlations between each of the predictor variables were calculated to determine the relationships among these variables.

Sample

    Participants were men who have sex with men (N = 50) 21 years of age and older, who reportedly engage in sex with other men. Participants were recruited from agencies, organizations, and businesses that serve the gay population in the Philadelphia metropolitan area. Men who could not read, or were mentally or physically unable to participate meaningfully in the protocol (e.g., demonstrate symptoms of active

psychosis, severe mood disturbance, or significant
developmental disabilities) were excluded.

Measures

I. *Screening*

Informed Consent Comprehensive Interview (ICCI)- (Spiga,
2004). The ICCI is an informed consent interview that has been
used successfully to insure that participants understand study
requirements. The participants read and signed the consent
form after which the ICCI was administered. At this point
there was there was a review of anything they misunderstood and
a clarification of all procedures and all questions were
answered. The ICCI has been shown to be a reliable and valid
instrument. The ICCI showed inter-rater reliability estimates
of 0.89 (Spiga, 2004).

*Structured Clinical Interview for the DSM-IV Axis I
Disorders (SCID-I)* (First, Spitzer, Gibbon, & Williams, 1995).
The SCID-I is a clinician-administered, semi-structured
interview designed to diagnose *DSM-IV* Axis I disorders (e.g.,
mood disorders, psychotic disorders). The version of the
SCID-I that was used in this study is the patient edition with
psychotic screen (First et al., 1995), developed specifically
for nonpsychotic psychiatric populations. The reliability and
validity of earlier versions of the SCID-I has been well

documented, with interrater reliability agreement (kappas) ranging from .70 to 1.00 (First et al, 1995; Onstad, Torgersen, & Kringlen, 1991; Segal, Hersen, & Van Hasselt, 1994). This instrument was used for screening purposes only.

Addiction Severity Index 5th Edition (ASI) (McLellan, Kushner, Metzger, Peters, Smith, Grissom, Pettinati, & Argeriou, 1992). The ASI is a semi-structured interview that assesses functioning in seven domains: medical status, employment/support status, drug use, alcohol use, legal status, family/social status, and psychiatric status. Participants provide data on the frequency of events indicative of adaptation or dysfunction in each domain, and participants and interviewers estimate the severity of dysfunction in each area on a 10-point scale. The instrument is designed to obtain lifetime information about problem behaviors and to focus specifically on the thirty days prior to assessment.

The ASI is one of the most commonly used instruments in the field of substance abuse (Alterman et al, 1998). Internal reliability of the psychiatric, drug, alcohol, family, employment, and legal scales is high with Cronbach's alpha values ranging from .71 to .84 (McLellan et al, 1985). In addition, concurrent and predictive validity over two years are supported for clinical subsamples based on co-morbid

psychopathology, HIV risk behaviors, personality indices, urine toxicology, and criminal records (Alterman et al., 1998).

Only composite scores and individual items on the ASI drug and alcohol sections were used to assess participants' substance use in this study. Data from the general information, family, employment, and legal sections of the ASI were used for descriptive purposes.

A semi-structured, open-ended interview was used to gather information about participants' sexual behavior and condom use practices. This measure assessed the frequency of insertive and receptive anal intercourse with other men, with and without the use of condoms over a three-month time period. Participants were also asked to report the number of men with whom they had unprotected anal intercourse over the same time period. Similar measures of sexual behavior have been shown to be reliable (Catania, Gibson, Chitwood, & Coates, 1990; Kauth, St. Lawrence, & Kelly, 1991).

In order to increase response accuracy, computer-generated blank calendar pages (with holidays marked) were used to facilitate participants' recall of sexual behavior over the specified time period. Calendar-based follow-back methods have been used extensively in the assessment of

substance use and related domains (e.g., Sobell & Sobell, 1992; Spiga et al, 1998).

II. Impulsivity

A composite of selected subscales from the following instruments were used to create a single self-report measure of impulsivity: Sexual Compulsivity Scale and the Barratt Impulsivity Scale.

Sexual Compulsivity Scale – Kalichman, S.C, 1994. The Sexual Compulsivity Scale was developed to asses tendencies toward sexual preoccupation and hypersexuality. Items were initially derived from self-descriptions of persons who self-identify as having a 'sexual addiction'. The self-descriptors were originally taken from a brochure for a sexual addictions self-help group. The scale has been shown to predict rates of sexual behaviors, numbers of sexual partners, practice of varieties of sexual behaviors, and histories of sexually transmitted diseases. The scale is internally consistent with Cronbach's Alpha coefficients that range between .85 and .91. It has been shown to be predictive of sexual risk-taking in MSM and in heterosexual men and women (Benotsch, Kalichman, and Pinkerton, 2001; Kalichman, Rompa, 2001; Benotsch, Kalichman, and Kelly, 1999).

Barratt Impulsivity Scale (Barratt, 1985). The Barratt

Impulsivity Scale is a 34-item questionnaire comprised of

three scales related to impulsiveness: non-planning, motor,

and cognitive. This instrument demonstrates good reliability

and validity with other measures of impulsivity (Barratt,

1994; Carlton & Manowitz, 1994; O'Boyle & Barratt, 1993).

Barratt (1985) reports internal consistency alpha coefficients

ranging from .89 to .92.

Computer Behavioral Measure

Risk-taking. The Balloon Analogue Risk Task (BART) was

used as a computerized behavioral assessment of participants'

risk-taking behavior. Developed by Lejuez et al. (2002), the

BART is a computerized measure involving actual risky behavior

that is rewarded up to a certain point at which further risky

behavior results in poorer outcomes (similar to real-life

situations).

Participants are presented with a series of simulated

uninflated balloons on a computer monitor that they can

inflate by clicking on a simulated balloon pump. With each

click on the pump, the balloon inflates and 5 cents are

accrued in a temporary reserve. However, if a balloon is

pumped past its individual explosion point, a "pop" sound is

generated, all money in the temporary bank is lost, and the

next uninflated balloon appears on the screen. At any point during each balloon trial, participants have the option to stop pumping the balloon and transfer money from the temporary bank to the permanent bank. Once money is transferred to the permanent bank, it is not affected when balloon explosions occur. After each explosion or money collection, exposure to that balloon is ended and a new balloon appears until a total of 20 trials (i.e. balloons) are completed.

According to Lejuez et al. (2002), the BART demonstrates sound experimental properties and is correlated with scores on other measures of impulsivity, sensation seeking, and self-control. Lejuez et al. (2002) report that scores on the BART are also correlated with the self-reported frequency of addictive, health, and safety risk behaviors. For a more detailed description of the BART, see Lejuez et al. (2002).

Procedures

I. Recruitment: Participants were recruited from agencies, organizations, and businesses that serve the gay population in the Philadelphia metropolitan area. The researcher contacted staff at these locations and informed them of the study's focus on condom use practices among men who have sex with men. Staff were asked to post flyers in visible places within their establishments. The flyers

informed men who are at least 21 years of age and reportedly engage in sexual intercourse with other men that they may be eligible to participate in the study. Contact information for the researcher was included in the flyers, as well as a statement indicating that compensation will be available for participation in the study. Non-probability sampling was used to recruit additional participants for the study. Participants who responded to the initial recruitment efforts were asked to give flyers (described above) to other men they know who engage in sexual intercourse with men.

When potential participants contacted the researcher for the first time, they were asked the following questions: 1) Are you 21 years of age or older; 2) Are you a biological male; 3) Do you have sex with other men; 4) Can you read and understand English? Those were eligible to participate were invited to schedule an appointment to be interviewed by the researcher at private locations provided by various local facilities and community agencies.

Before scheduling an interview appointment with potential participants, the researcher explained that the purpose of the study was to investigate factors related to condom use in men who have sex with men, and that all data collected during the interview would remain confidential. Potential participants were also informed that total participation time for the study

would not exceed a single two hour interview session, and that they would be compensated for their participation. Finally, potential participants were asked to bring proof of age with them to the scheduled interview.

Data Collection. When participants meet with the researcher, he briefly described the purpose and procedures of the study and provided a thorough explanation of confidentiality and informed consent protocols. Participants were asked to read and sign the consent form, at which point they were assigned a unique code that was used to identify all research data they generated. Those who were unable to read and understand the consent form were excluded from participating. In addition, those who failed to provide proof of age (e.g., driver's license, social security card) were excluded. Then, participants were screened for eligibility using the Structured Clinical Interview for the *DSM-IV* Axis I Disorders (SCID-I).

Participants who met the eligibility criteria were enrolled in the study. Once enrolled, participants' drug and alcohol use and past and current condom use practices were assessed with the two standardized, semi-structured interviews that were described previously. Then, participants completed

a questionnaire regarding impulsivity. Finally, participants completed a computerized task to assess risk-taking.

Compensation and Voluntary Participation

Participants received compensation for their participation. Total participation time for each participant did not exceed two hours. Prior to participation in the experiment, the compensation protocol was explained to the participants. They were also told that their participation in the study was completely voluntary, that they could withdraw from the study at any time without negative consequences, and that they would receive all money owed to them.

Confidentiality. Participants were informed that their participation in the study and anything said during the assessment process would be held in the strictest confidence, and they would not be identified in any reports or publications resulting from the study.

Power Analysis

Power analysis assesses the likelihood that a particular significance test will be sufficient to reject the null hypothesis when it is false. Failure to reject the null hypothesis when it is false leads to a type II error. A power

of .80 refers to an 80% probability of rejecting the null
hypothesis when it should be rejected. According to Cohen
(1992), statistical power is the relationship among four
variables: sample size (N), significance criterion (α),
population effect size (ES), and statistical power. The
relationship between these variables is such that each is a
function of the other three. Thus, if one knows three of the
variables, the fourth can be determined. In this study, a
medium effect size is assumed with an alpha level of .05
leading to an a priori power level of .80 for a sample of 50
or larger.
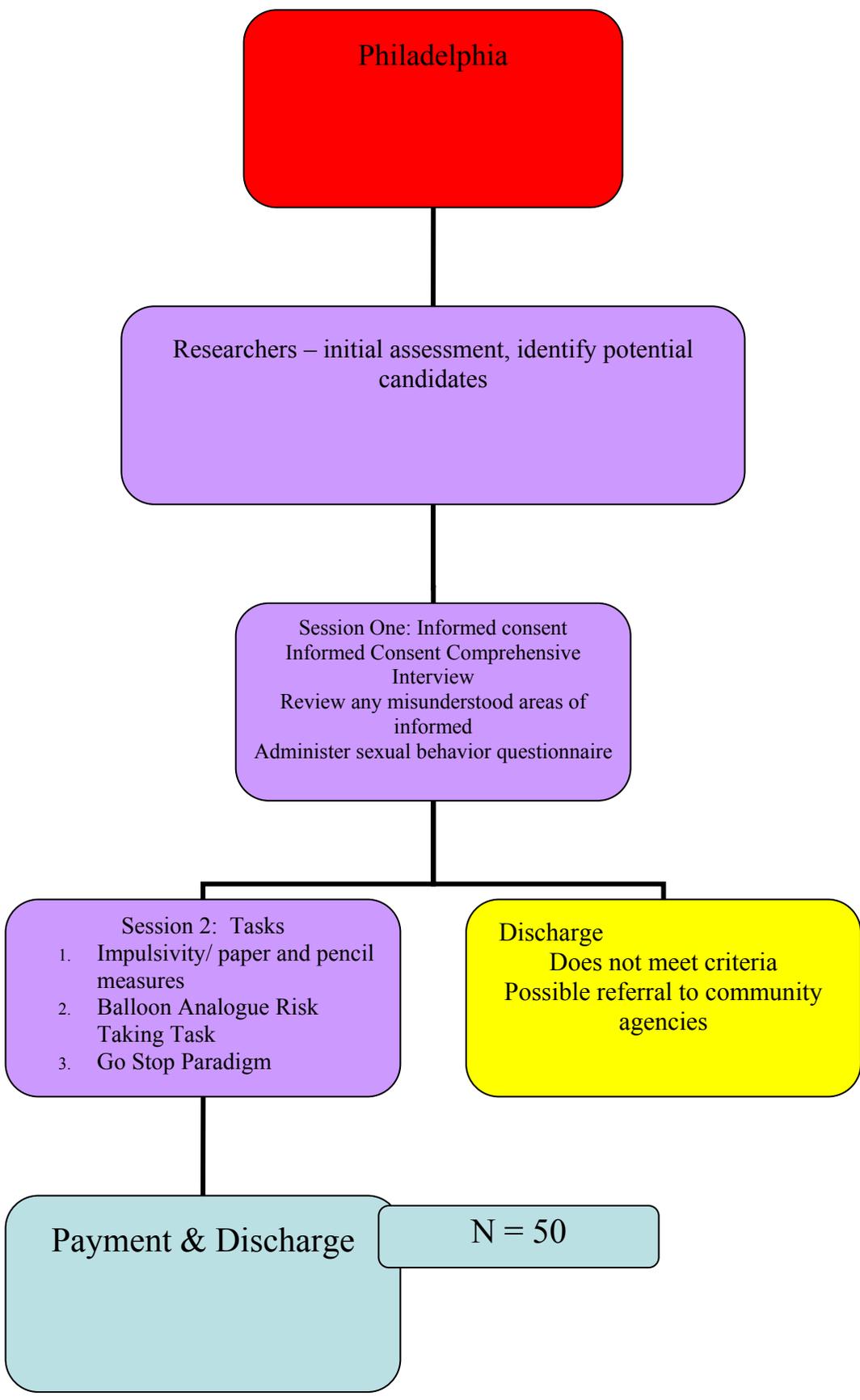
CHAPTER 4

RESULTS

This study examined the association between impulsivity, substance use, and condom use in men who have sex with men. Specifically, this study assessed whether self-reported substance use and impulsivity measures predict condom use in men who reportedly engage in sex with other men. This study also explored the interrelations among impulsivity measures.

Condom use, the dependent variable, was assessed by a semi-structured, open-ended interview which gathered information about participants' sexual behavior and condom use practices. The independent variables of substance use and impulsivity constructs were measured with a questionnaire, self-reported cognitive personality based paper and pencil measures, and a behavioral computer task. The open ended interview also assessed demographic information and interpersonal distress. Participants were limited to men who were at least 21 years of age and reportedly engage in sexual intercourse with other men. This resulted in a sample size of 53 men.

Resulting Sample

The mean age of the men was 35.5 years old, SD = 11.5 (ranging from 21-51) and their average monthly income was $3400, SD = $3200 (ranging from $0-$4500). All participants completed high school, 39% completed some college, and 13% had an advanced degree. Thirty eight percent lived alone, 32% with a romantic partner and 30% with roommates and/or family. Ninety six percent of the men were employed at the time and 68% of them reported being either satisfied with or indifferent towards their current living situation. (See Tables 1 and 2)

Table 1

Means & SDs of study variables

Variable (range)	Mean (SD)
Age (21-51)	35.5 (11.5)
Monthly income (range)	$3,400 ($3,200) ($0-4500)

Table 2

Percentages of study variables

Variable	Percentage
Age	
21-26	26.5
27-32	22.8
33-42	28.4
45+	15.2
Variable	Percentage
Education	
Associates	1
Bachelors	37.7
Masters	9.4
Philosophy Doctor	1.9
Juris Doctorate	1.9

The ethnic distribution of the group was as follows: 47.2% Caucasian, 24.5% African American, 22.6% Hispanic/Latino and 5.7% other; most reported no religious affiliation. Ninety three percent of the sample had sex exclusively with men, 5.7 % with mostly men and 1.9 % equally with men and women. All of the participants reported having had penetrative sex with a man at some point in their lives. Most men began having sex with men between the ages of 14 and 19 and by the time of the

study they reported having have had at least two male sexual

partners. Tables 3 and 4 illustrate the distribution of

race/ethnicity and religious affiliation.

Table 3. *Ethnicity*

Variable	%
African American	24
Caucasian	47
Hispanic/Latino	22
Other	5.7

Table 4. *Religion*

Variable	%
None	50
Catholic	18
Protestant	9.4
Other	18

The total number of sexual partners during their lifetime

ranged between 0 and 22 with 1 or 2 being the most frequent

response (56%). Eighty-three percent had had unprotected sex

at least once and 70% reported still being curious about

having anal sex without a condom despite knowing the risks

involved.

When asked specifically about the last time they had sex

with a male, 76% had had sex in the past week. During that

time, 30% had unprotected anal sex and 43% had anal sex with a

condom; all of them reported that they knew their sexual

partner/s previous to the sexual encounter.

Of all the participants, seventy-one percent responded "yes" to the having had used cocaine, pot, speed, heroin or any other drug to get high or make themselves feel good at any point in their lives; 28% of them had done so in the past 30 days. Of those who had used drugs in the past month: nine had snorted cocaine, one had smoked it, one had used LSD, seven marijuana and seven had recreationally used Xanax, Valium and/or painkillers. Of the 36 participants who reported drug use: 22 were Caucasian, seven African American and seven Hispanic/Latino. Thus, the distribution of ethnicity between substance users and non users differed significantly – see Table 5.

Table 5. *Percentages of Substance use by ethnicity*

Variable	+ Use	
Ethnicity	N	%
African American	7	53.8
Caucasian	22	88
Hispanic/Latino	7	58.3

It is important to also highlight that though the study focused on substance use, seventy-four percent of the men reported using alcohol a few times each week or everyday and fully 43.4% responded with a "yes" to having had problems with alcohol use at some point in their lives.

Preliminary Results

Multiple theoretical and operational definitions of impulsivity and related constructs were measured. One of them was the phenomenon of temporal discounting which was assessed by measuring risk taking as both are closely related. According to Lejuez et al. (2002), risk-taking behaviors are defined as "those that involve some potential for danger or harm while also providing an opportunity to obtain some form of reward" (p. 75). They developed a computer-based measure of risk-taking designed specifically to assess participants' sensitivity to reward and insensitivity to punishment. Correlations between the Ballon Analogue and various dependent variables are presented in Table 6.

Table 6 – Balloon Analogue Risk Task

Item	r	P
Drug use (past 30 days)	.367	.007
Cocaine used (past 30 days)	.321	.007
Engaging in unprotected anal	.296	.031
Problems with alcohol	.370	.000

On this measure, The Balloon Analogue Risk Task, participants averaged 314 pumps on sessions that lasted anywhere from 37 to 537 seconds. The mean number of balloons that exploded during sessions was three. As seen in Table

six, scores were significantly correlated to the two principal topics of this study: substance use [drug use in past 30 days, r = .367(p = .007); times cocaine was used in past 30 days, r = .321 (p = .007)], and engaging in unprotected anal intercourse, r = .296 (p = .031). Scores were also significantly associated to having had problems with alcohol use at some point in the participants lives, r = .370 (p = .000).

Given that impulsivity is associated with temporal discounting, risk-taking, and present time orientation, people not characterized as impulsive are fairly well organized and have relatively strong planning skills. The Barratt Impulsivity Scale (Barratt, 1985), a 34-item questionnaire comprised of three scales, was used in order to assess future planning. Correlations between the Barrat Scale and various dependent variables are presented in Table 7.

Table 7 Barrat Impulsivity Scale

	R	p
Anal sex with condom	.458	.001
Oral sex instead of interc.	.370	.006
Engaging in unprotected anal	.278	.044

Thus, as illustrated in Table 7 and consistent with the measure, scores were highly correlated to subjects' reports of engaging in anal sex with a condom, r = .458 (p = .001); having only oral sex instead of intercourse, r = .370 (p = .006); and lowest with engaging in unprotected anal sex, r = .278 (p = .044). These scores reflect the individual items most highly rated by the participants: *I am a careful thinker* 2.7 (SD .47); followed by, *I plan tasks carefully* 2.5 (SD .54); and *I concentrate easily* 2.4 (SD .71). All item responses ranged from "1" defined as "rarely like me" to "3" categorized as "most often like me."

Another association was investigated with the Sexual Compulsivity Scale *(Kalichman, 1994)* which was developed to measure tendencies toward sexual preoccupation and hyper sexuality. Although this scale has been shown to predict rates of sexual behaviors, numbers of sexual partners, and histories of sexually transmitted diseases in various populations, in this sample it was only related to alcohol consumption. These correlations are presented in Table 8.

Table 8 Sexual Compulsivity Scale

	R	p
Problems with alcohol	.328	.016
Abuse alcohol (past 30 days)	.287	.037

As seen in Table eight, the correlation was .328 (p = .016) with participants who reported having had problems with drinking and those that had abused alcohol in the past 30 days, r = .287 (p = .037). The highest rated individual item on this measure was "I found myself thinking about sex while at work," with a mean score of 2.58 (out of 5) and a Standard Deviation of 1.04.

In addition to the components assessed above, research data indicate that impulsivity is also characterized by affective components such as boredom proneness and sensation seeking (Petry, 2001; Zuckerman et al., 1978). Two scales were used in order to examine if there is an association between self-reported sensation seeking, boredom and increased risky sexual behaviors. The first measure used was the Sexual Sensation Seeking Scale (Kalichman & Johnson, 19940).

Table 9 Sexual Sensation Seeking Scale

	r	*p*
Unprotected anal sex	.375	.006
Drug use (past 30 days)	.301	.028

As illustrated by Table 9, this measure was most significantly correlated to engaging in unprotected anal intercourse, r = .375 (p = .006); and to having used drugs in the past 30 days, r = .301 (p = .028). The highest items scored on a Likert scale ranging from "1" defined as not at all pleasurable to "5" defined as extremely pleasurable in order of highest to lowest scored were: *I like new and exciting sexual experiences and sensation* = 3.8 pleasurable (SD1.3); *I enjoy watching x rated videos* = 3.7 (SD 1.5); *I enjoy the company of sensual people* = 3.5 (SD 1.3); *I am interested in trying out new sexual expressions* = 3.5 (SD1.4); and *I feel like exploring my sexuality* 3.5 (SD1.4).

The least correlated measure to sexual behavior and/or substance use was the Brief Sensation Seeking Scale (Hoyle et al., 2002; Slater, 2003). This form, like the Sexual Sensation Seeking Scale, was adapted from the longer Zukerman Sensation Seeking Scale (Zuckerman et al., 1978). The Brief

Sensation Seeking Scale is not expressly related to sex or

substance use. Results on this measure were only associated

to alcohol use.

Table 10 Brief Sensation Seeking Scale

	r	*p*
Problems with alcohol (ever)	.321	.019
Abuse alcohol (past 30 days)	.291	.034

As seen on Table 10, scores were most highly correlated

to participants having reported problems with alcohol abuse at

some point in their lives, r = .321 (p = .019) and having had

abused alcohol in the past 30 days, r = .291 (p =.034). The

individual item with the highest score on this measure was, "I

prefer friends who are exciting and unpredictable" with a mean

of 2.45 and a standard deviation of 1.25 on a five item Likert

scale.

To test the interrelations among the different dimensions

of impulsivity, Pearson correlations were also conducted

between all measures. Table 11 includes only those

correlations that were significant at the .05 level or

greater. The two most correlated measures were the Sexual

Sensation Seeking Scale and the Sexual Compulsivity Scale, r

=.573 (p = .000). Both scales' items ask expressively sexual questions; however, the SSS scale was specifically designed to measure boredom proneness and sensation seeking tendencies related to sex whereas the Sexual Compulsion Scale focuses on thought content related to sexual preoccupation and hyper sexual behaviors.

The Sexual Sensation Seeking Scale correlated most with other measures as it also significantly correlated to both the Barrat [r = .374 (p = .006)] which measures future planning, and the Brief Sensation Seeking Scale which measures boredom proneness and sensation seeking [r = .284 (p = .039)]. This last measure, BSSS, was also correlated with both the Barrat [r = .274(p = .047)] and the Sexual Compulsivity Scale, r = .237 (p = .088). Risk-taking, as measured by The Balloon Analogue Risk Task, did not correlate with any of the measures.

Table 11 Significant Correlations Amongst Measures

	SSS	S	BSS
Barrat	.284	.274	.237
Barrat	.374	--	--

* Correlations are significant at the 0.01 level

Results

In this study, the small number of respondents who reported substance abuse were more likely to be engaged in unprotected sex. As seen in Table 12, individuals who abuse substances had significant scores on both measures of risk-taking, specifically the Bart and the Sexual Sensation Seeking Scale. Risk-taking was significantly correlated to the two principal topics of the study; substance use [drug use past 30 days, r = .326 (p = .007), and engaging in unprotected anal intercourse, r = .296 (p.031). These individuals also scored high on both sensation seeking/boredom proneness measures.

Specifically, the affective components of boredom proneness and sensation seeking as measured by the Brief Sensation Seeking Scale, the Barrat, and the Sexual Compulsivity Scale showed a significant relationship between alcohol use/abuse and risky sexual behaviors. As many as seventy-four percent of the men in the sample reported using alcohol a few times each week or everyday and fully 43.4% responded with a "yes" to having had problems with alcohol use at some point in their lives. Scores on these measures showed a strong correlation between alcohol use/abuse [BSS r = .321 and Sex Comp r = .328] and engaging in unprotected anal sex (Barrat, r = .278).

Table 12 Significant correlations across measures

	BSSS	Barrat	SexCom	Bart	SSSS
Problem Drinking	.321**		.328*		
Drug use (past 30 days)				.367*	.301*
Unprotected sex					
Unprotected anal		.278*		.296*	.375**
Anal with a condom		.458**			

*significant at the .05 level
**significant at the .01 level

Summary of Results

In this study exploring the relationships among impulsivity and condom use in men who have sex with men, a small number of participants admitted to use/abuse of substances. There were, however, enough responses to establish a significant correlation between risky sexual behavior and alcohol consumption. Specifically, the affective components of boredom proneness and sensation seeking had a significant relationship with both alcohol use/abuse and risky sexual behavior.

CHAPTER 5

DISCUSSION

Findings About the MSM Community

As stated previously, the components of impulsivity in the men who have sex with men community have not been examined in detail. While it is undoubtedly important to continue to spread accurate information about HIV transmission through educational efforts, it seems imperative to also consider the group's distinctive needs and challenges. Such an examination is likely to yield a wealth of information, as this study certainly did, about how to recruit, research, and target educational interventions for this population. Despite the lack of statistically significant results, it is nonetheless useful to examine the results of this study to lay the groundwork for future research and discern ways in which this population can be attended to in behavioral medicine and clinical health psychology research in a way that is multiculturally competent and distinctively beneficial to this group's unique background and challenges.

The importance of having an entry to the community seems paramount when one considers this group. It was much easier to approach subjects through their friends and acquaintances, as the researcher and his life partner were known in the closely-knit Philadelphia gay community. In fact, subjects

who had heard about the study from their acquaintances,

friends and colleagues, telephoned and emailed the

investigator to find out if they would be eligible for

participation. In two health agencies, where the researcher

was not personally known to the potential participants,

response was much more lukewarm and suspicious, as potential

participants did not return phone calls, refused to

participate in the study and displayed discomfort with the

idea of revealing their personal information, regardless of

reassurances about their confidentiality being protected.

Interestingly enough, while advertisements about the study had

been distributed in several gay friendly establishments, most

of the interest in participating in the study came via

snowballing, through current study participants, whereas,

repeated efforts had to be made to engage subjects in agencies

regardless of the established reputation of the institutions.

Despite the great strides in gay rights over the past 10

years, the suspicion of any form of authority, hesitation to

allow an unknown researcher into one's private world, and the

difficulty with disclosing sexual and drug use information,

may be byproducts of homophobia (Hamilton & Mahalick, 2009).

The difficulty in recruitment in this study underscores the

importance of building rapport and establishing an entry to

the community in order to study it, as it is clear that men,

who had known the researcher and his partner, were much more willing to participate than those who did not.

Interestingly, the rate of lack of self-disclosure can conversely also be attributed to familiarity with the researcher. While in the conception of the study, a face-to-face interview seemed particularly appropiate for this population, it seems plausible to suspect that more participants could have opened up about their sexual behavior and substance use history had the questions been presented in a computer format. Though relational variables, such as an interviewer's empathy, listening skills and rapport building, could have helped breach a wall of suspicion and protectiveness, potential familiarity might have inhibited participants from being more forthright in their answers.

Whereas it is apparent that the results did not show a strong correlation between substance use and high risk behavior, given the small number of men who admitted to such use, it is interesting to examine the scores of the men who did. In this subset, risk-taking was significantly correlated to the two principal topics of the study: substance use [drug use in past 30 days, $r = .367$ ($p = .007$); times cocaine was used in past 30 days, $r = .321$ ($p = .007$)], and engaging in unprotected anal intercourse, $r = .296$ ($p = .031$). The few individuals who had high scores for risk taking showed

significant risks for engaging in unsafe sexual practices and both alcohol and substance use.

The fact that there was a non-significant relationship between substance use and propensity to engage in high risk sexual behavior suggests that while the two might be related in a subset of the MSM population, it is not *the* main risk factor for MSM. In fact, though the individuals who had high scores for risk taking did show significant risks for *both* engaging in unsafe sexual practices and *both* alcohol and substance use, it was overall the affective components of boredom proneness and sensation seeking that had the most significant relationship between both alcohol use/abuse and risky sexual behavior. It is possible that alcohol use/abuse alone leads men to take greater risk with their health in and of itself and drug use leads a smaller sub-set of MSM to take even greater risks. It is also feasible that alcohol and substance use are on a continuum where boredom proneness-sensation seeking and alcohol use are at one end and risk taking and substance use are at the other. Thus, the subject might be more likely to adhere to safer sex practices if he perceives himself as only seeking an escape from boredom whereas those who are risk takers are more likely to engage in any type of health impairing activity regardless of their feelings. Further, whereas overall there seemed to be little

relationship in this sample between risk-taking and substance use, it is possible that a higher number of participants might have yielded a stronger correlation.

As previously stated, homophobia manifested as lack of social support also has to be considered when looking at these results. Studies on social support suggest that when gay men experienced greater minority stress (i.e., internalized homophobia, perceived stigma, and antigay physical attack), they are more likely to abuse alcohol (Hamilton & Mahalik, 2009). Additionally, bars historically have been safe havens for gay men to gather and meet one another. This setting robs men of true relational intimacy, a feeling of being heard and understood and connected to another human being, as this environment does not foster such interactions. Moreover, homophobia forces these men to keep private information confidential thus making any investigation of their private lives a difficult one to undertake.

Finally, the sample of the community used in this study was highly educated, employed, and was fluent in English. This is noteworthy since these men represent a unique and possibly non-representative segment of the general MSM population. Thus, in order to collect a more multicultural general MSM sample, one would need to keep in mind the level of education and English language familiarity. For instance, less literate

populations might require assistance in filling out the surveys, need more extensive directions or may need to utilize software in their native language, as opposed to American English.

Limitations

While self-report measures are widely utilized in psychology studies in general, there are a number of problems with utility and construct validity in using these measures: Cognitive biases of the participants, including the desire to present oneself in a more positive light; participants' mood at the time; their value system; or even the tendency to answer affirmatively on all types of items, may infringe upon reliability and validity. This may cause problems in drawing any causal inferences. (Hanita, 2000; Razavi, 2006.)

In addition, and whereas the paper-and-pencil measures used, such as the BSSS, have been thoroughly validated on a large and diverse sample before being introduced for use in this study, it is nonetheless a challenge to conduct assessments as self-report measures. One cannot be sure that participants would be entirely honest when reporting their behaviors, for instance. One cannot be confident either that even if they were honest, they would have the advantage of properly understanding the standardized scale. The advantage

of self-report measures lies in their convenience; they are easy to administer to a large number of subjects simultaneously, and they are affordable.

Another major limitation of the study is its small sample. Whereas it was a tremendous challenge to recruit participation in the study, it would have been beneficial to have conducted this study with a greater number of participants. Also, had the sample been larger, more variability in terms of participants' ethnicity and other demographics could have been possible.

It would have been interesting and potentially enlightening to see the differences across a diverse sample with different levels of education and different levels of acculturation to the gay community. Further, it is possible that with a larger sample, it would have been plausible to establish a clearer relationship between substance use and risk taking. Perhaps, had the study been conducted in a number of different locations, it would have been more feasible to recruit more participants in the study.

Having the information on the challenges of recruitment with this population gathered from this study, may enable future researchers to commence their data collection procedure several years in advance in order to recruit the maximum

number of participants possible and achieve optimal results of their research.

It is plausible that had more measures been available to utilize in the course of the study, and had more methodologies been in place to recruit the subjects in the study, more statistically significant results could have been reached. It is also plausible that like many other studies that investigate both sexual and substance use information, even in the most ideal of conditions, the study would not have yielded any significant results.

Implications

Men who abuse either alcohol or substances are at greater risk than their non - abusing counterparts for engaging in high risk sexual behavior. This study highlights the need for educational efforts targeted at this population to not only impart accurate information but also to include a functional assessment of the behavior components of unprotected sexual intercourse. In light of this evidence, educators and researchers must review the current educational methods of educating MSM's about the mechanisms of HIV infection as they are inadequate as means of effecting behavioral change (e.g., Kelly, 1995). This study aims to increase our understanding of the specific components underlying unprotected sexual

intercourse between men. Educators having this understanding will be able to create more effective educational interventions for reducing high risk behaviors and addressing the specific affective components that influence high risk behaviors in the MSM populations.

Summary

This study revealed that condom use is correlated with substance and alcohol use as well as three specific sub traits of impulsivity; risk-taking, boredom proneness and sensation seeking.

HIV educational efforts targeted at the MSM population should include both accurate information as well as skills to manage the underlying affective components that lead these men to engage in high risk sexual practices. In addition, including functional assessments in these prevention efforts may assist in better understanding this populations' unwillingness to engage in recommended safer sex practices and devise effective ways to address these accordingly.

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APPENDIX

QUESTIONNAIRE

<u>Men's Health Study Interview</u>

Intro: Hello. My name is Felipe Fuentes and I am a graduate student conducting research on different aspects of men's health. During this interview I will be asking you about your job, your income and schooling and also about how you have felt over the past several weeks. In addition, I will be asking you some very personal questions that include possible drug use and your sexual health. As you will see, many of the questions I will ask you are very personal. I understand this and have taken great care to protect the privacy of your answers by assuring that all the information that I collect remains anonymous. It is important that you answer EVERY question honestly. In fact, it is better not to answer a question at all then to tell me something that is not accurate or true.

I - In this section I am going to ask you some questions about your background.

1. Could you tell me where you were born? _____ City
                                                                    _____ State
                                                                    _____ Country

2. What is you date of birth? _____ (M/D/Yr)

3. How old are you know? _____ years

4. Of what race do you consider yourself?
          1. Black (African American) / 2. White(Caucasian) / 3. Hispanic (Latino) /
          4. Asian/ 5.Native American/ 6. Other _____

5. Do you have a religious preference?
          1. Protestant / 2.Catholic / 3. Jewish
          4. Islamic 5. None /6. Other _____

6. Education completed: _____ (yrs/months)
          * Ged = 12 years (include formal education only)

7. Do you have a post-high school educational degree?
          1. A.S. / 2.BA/BS / 3. MA/MS/MDiv
          4. PhD 5. MD /6. JD

8. Are you currently employed?
          1. Yes / 2. No

9. What is your job? _____

10. How long have you been employed at your current job? _____(yrs/months)

11. Could you describe your job duties?

12. What is your monthly net income? _____ ($)

13. How much money did you receive from the following sources in the past 30 days?

    1. Employment_____
    2. Unemployment Compensation_____
    3. Welfare_____
    4. Pension, benefits or Social Security_____
    5. Mate, family, friends_____

II. Now I am going to ask you about your current living arrangement

1. Do you rent or own your home?

2. How much do you pay for rent/mortgage/ per month? _____

3. Do you live alone or with a partner?
    1. Alone / 2. Partner

4. Are you satisfied with this situation?
    1. No / 2. Yes / 3. Indifferent

III. These next few questions are about how you have been feeling over the past two weeks.

Yes No 1. Over the past two weeks have there ever been times when you felt
      unusually depressed, empty, sad or hopeless?

Yes No 2. Over the past two weeks have there ever been times when you felt very
      irritable or tired most of the time for hardly any reason at all?

Yes No 3. Just before you began to have any of these feelings, were you drinking or
      taking any drugs?

Yes No 4. Over the past two weeks, have there ever been times when you felt
      unusually charged up, hyper, restless of excited for several days at a time?

Yes   No   5.   Over the past two weeks have there ever been times when other
                  people said that you were too hyper, too charged up, too excited or too
                  talkative?

Yes   No   6.   How long do these moods last? (If less than 1 week) What is the longest
                  they have ever lasted? (If less than 1 week) Have these excitable moods ever
                  stayed with you most of the time for at least 1 week? (Mark yes if the mood
                  lasted 1 week or longer).

Yes   No   7.   Just before this began were you drinking or taking any drugs?

Yes   No   8.   Over the past two weeks have you heard voices or seen things that no one
                  else could see or hear?

Yes   No   9.   Over the past two weeks have you ever felt that your mind or body was
                  being secretly controlled, or controlled somehow against your will?

Yes   No   10.   Over the past two weeks have you ever felt that others wanted to hurt you
                  or really get you for other some special reason, maybe because you had
                  secrets or special powers or some sort?

Yes   No   11.   Over the past two weeks have you ever had any other very strange, odd or
                  really peculiar things happen to you? Please tell me what they were.
                  (Mark yes if the response resembles psychotic phenomena).

Yes   No   13.   Did this happen even when you were not drinking or taking drugs?

Yes   No   14.   Did this happen off and on for at least several days at a time?
                  (Mark yes is total time experienced more than 1 week, even if not
                  continuous.)

Yes   No   15.   Just before this began were you drinking or taking any drugs? (If NO,
                  Have there been any other times when you've been depressed and it was
                  not because of drugs/alcohol?)

Yes   No   16.   Has drinking ever caused you any problems in your life?

Yes   No   17.   Has drinking ever been problem for you over the past month?

Yes   No   18.   Have you ever used cocaine, pot, speed, heroin, or any other drugs to get
                  high or make yourself feel good?

Yes   No   19. Have you used any of these drugs more than once over the past month?

IV. Many of the questions I am about to ask you are even more personal. Let me assure you once again that I have taken great care to protect your privacy. Everything you tell me will remain anonymous. Again, it is important that you answer EVERY question honestly. In fact, it is better not to answer a question at all then to tell me something that is not accurate or true.

1. In the past month, how often have you used beer, wine, or liquor?
       0. Not at all
       1. A few times
       2. A few times each week
       3. Everyday

2. In the past month, how often have you used marijuana?
       0. Not at all
       1. A few times
       2. A few times each week
       3. Everyday

3. In the past month, how often have you smoked heroin?
       0. Not at all
       1. A few times
       2. A few times each week
       3. Everyday

4. In the past month how often have you smoked amphetamines, meth, speed, crank, or crystal?
       0. Not at all
       1. A few times
       2. A few times each week
       3. Everyday

5. In the past month how often have you smoked crack, rock, or freebase cocaine?
       0. Not at all
       1. A few times
       2. A few times each week
       3. Everyday

6. In the past month how often have you snorted cocaine (not missed)?
       0. Not at all
       1. A few times

    2. A few times each week

    3. Everyday

7. In the past month, how often have you snorted heroin?

    0. Not at all

    1. A few times

    2. A few times each week

    3. Everyday

8. In the past month how often have you snorted amphetamines, meth, speed, crank, or crystal?

    0. Not at all

    1. A few times

    2. A few times each week

    3. Everyday

9. In the past month how often have you used benzodiazepines (benzos, benzies) such as Xana, Valium, Klonopin, or Ativan?

    0. Not at all

    1. A few times

    2. A few times each week

    3. Everyday

10. In the past month how often have you taken painkillers-pills such as Percodan, Percocet, Vicodin, Demerol, Dilaudid, Darvocet, or syrup (Codeine)?

    0. Not at all

    1. A few times

    2. A few times each week

    3. Everyday

10a. What type of painkillers did you use? _____

11. In the past month how often have you used acid, LSD, or other hallucinogens?

    0. Not at all

    1. A few times

    2. A few times each week

    3. Everyday

12. In the past month, have you injected drugs?

    1. Yes

    2. No

* If no, go to next section.

13. In the past month how often have you injected cocaine (not mixed)?
      0. Not at all
      1. A few times
      2. A few times each week
      3. Everyday

14. In the past month, how often have you injected heroin (not mixed)?
      0. Not at all
      1. A few times
      2. A few times each week
      3. Everyday

15. In the past month, how often have you injected cocaine and heroin together (speedball)?
      0. Not at all
      1. A few times
      2. A few times each week
      3. Everyday

16. In the past month how often have you injected amphetamines, meth, speed, crank, or crystal?
      0. Not at all
      1. A few times
      2. A few times each week
      3. Everyday

17. In the past month how often have you injected Dilaudid?
      0. Not at all
      1. A few times
      2. A few times each week
      3. Everyday

18. In the past month, have you shared needles or works?
      1. Yes
      2. No

19. With how many different people did you share needles in the past month?
      0. Zero or I have not shot up in the past month
      1. 1 other person
      2. 2 or 3 different people
      3. 4 or more different people

20. In the past month, how often have <u>you</u> used a needle after someone (with or without cleaning)?
        0. Never or I have not shot up or shared in the past month
        1. A few times (1 or 2 times)
        2. About once a week (3 or 4 times)
        3. More than once a week (5 or more times)

21. In the past month, how often have others used after you (with or without cleaning)?
        0. Never or I have not shot up or shared in the past month
        1. A few times (1 or 2 times)
        2. About once a week (3 or 4 times)
        3. More than once a week (5 or more times)

22. In the past month, how often have you shared needles with someone you know (or later found out) has AIDS or was positive for HIV, the AIDS virus?
        0. Never or I have not shot up or share in the past month
        1. A few times (1 or 2 times)
        2. About once a week (3 or 4 times)
        3. More than once a week (5 or more times)

23. Where did you get your needles during the month?
        0. I have not shot up in the past month
        1. From a diabetic
        2. On the street
        3. Drugstore
        4. Shooting gallery or other place where users go to shoot up
        5. Needle exchange program
        6. Other, specify_____

24. In the past month, how often have you been to a shooting gallery/house or other place where users go to shoot up?
        0. Never
        1. A few times (1 or 2 times)
        2. About once a week (3 or 4 times)
        3. More than once a week (5 or more times)

25. In the past month, how often have you been to a Crack House or other place where people go to smoke crack?
        0. Never
        1. A few times (1 or 2 times)
        2. About once a week (3 or 4 times)
        3. More than once a week (5 or more times)

26. Which statement best describes the way you cleaned your needles during the past month?
> 0. I have not shot up in the past month
> 1. I <u>always</u> use new needles
> 2. I <u>always</u> clean my needle just <u>before</u> I shoot up
> 3. <u>After</u> I shoot up, I <u>always</u> clean my needle
> 4. <u>Sometimes</u> I clean my needle, sometimes I don't
> 5. I <u>never</u> clean my needle

27. If you have cleaned your needles and works in the past month, how did you clean them?
> 0. I have not shot up in the past month
> 1. Soap and water or water only
> 2. Alcohol
> 3. Bleach
> 4. Boiling water
> 5. Other, specify_____
> 6. I did not clean my needles in the past month
> 7. I ALWAYS used new needles in the past month

V. Now I am going to ask you questions about your recent sexual history. Again, let me assure you that your answers are entirely confidential. Some words I use in this interview may not be familiar to you, or you may not be sure of their exact meaning. The following definitions might be helpful: *Oral sex* is sex in which the mouth or tongue is in contact with the genitals. *Anal sex* is sex in which the penis enters the anus, or back passage. *Penetrative sex* is sex in which the penis enters the anus. *Nonpenetrative sex* includes oral sex, and also many other forms of sex such as massage, touching, and mutual masturbation. *Protected sex* refers to penetrative sex with a condom or oral sex with a latex barrier or condom. A *regular partner*, for the purpose of this study, is someone with whom you have had sex more than once.

1. Who do you have sex with?
> 1. Only men 2. Mostly men 3. Equally men and women

2. Have you ever had penetrative sex? 1. Yes 2. No

3. If yes, at what age did you first have penetrative sex?_____ years

4. Have you ever had unprotected penetrative sex (penetrative sex without a condom)?
> 1. Yes 2. No

The following questions relate to your sexual encounter(s) over the past month. This includes nopenetrative sex such as oral sex and mutual masturbation. If you have not had sex in the last week please move to section C.

5. In the last month how many partners have you had? _____

6. How many of these were regular partners (people with whom you have had sex more then once)? _____

7. How many times have you had sex with a regular partner in the last month? _____

   a. On how many of these occasions did you have penetrative sex? _____
   _____giving (top) _____receiving (bottom) _____both

   b. On how many of these occasions did you use a condom? _____

   c. On how many of these did you use any or all of the following:

   _____ alcohol/ how many times_____
   _____ cocaine/ how many times_____
   _____ benzoids/ how many times_____
   _____ nitrites (poppers/rush)/ how many times_____
   _____cannabis(marijuana)/ how many times_____
   _____crystal meth/ how many times_____

8. How many times have you had sex with other partners in the last month? _____

   a. On how many of these occasions did you have penetrative sex? _____
   _____giving (top) _____receiving (bottom) _____both

   b. On how many of these occasions did you use a condom? _____

   c. On how many of these did you use any of the following:

   _____ alcohol/ how many times_____
   _____ cocaine/ how many times_____
   _____ benzoids/ how many times_____
   _____ nitrites (poppers/rush)/ how many times_____
   _____cannabis(marijuana)/ how many times_____
   _____crystal meth/ how many times_____

The following questions refer specifically to your last sexual encounter.

9. How long ago was your last sexual encounter?
      1. less then a week ago
      2. between one week and one month ago
      3. between one month and three months ago
      4. between three months and six moths ago
      5. between six months and one year ago
      6. more than one year ago

10. What kind(s) of sex did you have on this occasion? Please answer yes or no to the following activities:

unprotected anal sex   yes/no
anal sex with a condom   yes/no
oral sex   yes/no
other forms of nonpenetrative sex (massage/mutual masturbation) yes/no

11. What gender was your partner on this occasion? Male/female

12. On this occasion did you or your partner mention using a condom?
      a. you
      b. your partner
      c. neither

13. In this occasion did you or your partner mention practicing nonpenetrative sex?
      a. you
      b. your partner
      c. neither

14. Was s/he a regular sexual partner (a partner with whom you have had sex more than once)? Yes/no

15. Have you ever had an HIV antibody test?
      1)Yes/ 2)no

16. Did you get the results of this test?
      1)yes/ 2)no/ 3)non applicable

VI - We are almost finished. I just have a couple of more questions to ask you about how you spend your free time and about what you normally do for fun and relaxation.

1. With whom do you spend most of your free time?
      1)friends / 2)family / 3)alone

2. Are you satisfied spending your free time that way?
   1)Yes/ 2)no

3. How many close friends do you have? _____

4. What kind of activities do you do for fun/relaxation?