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The influence of masculinity ideology on high-risk sexual behavior among men who have sex with men

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The Influence of Masculinity Ideology on High-Risk Sexual Behavior among Men who

Have Sex with Men

by

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A thesis submitted in partial fulfillment
of the requirements for the degree of
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Dedication

For JP and all the men who graciously volunteered their time.

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Christopher Wheldon

ABSTRACT

Epidemiologic evidence shows that the incidence of HIV among men who have sex with men (MSM) is on the rise. High-risk sexual behaviors are the primary mode of transmission and are responsible for increased rates of infection. A growing body of evidence suggests that normative beliefs and values regarding masculinity, or masculinity ideology, may help to explain the variability in certain high-risk sexual behaviors. This study investigated the associations between a measure of masculinity ideology and sexual risk-taking among a sample of MSM. In addition, behavioral mechanisms in which masculinity ideology may lead to sexual risk-taking were explored, including the use of the Internet to meet sex partners and the use of drugs during sexual encounters.

A cross-sectional, web-based survey was used to collect data from participants recruited via the Internet (n=907). Correlation and multiple regression analyses supported the hypotheses that masculinity ideology is positively associated with number of sexual partners and frequency of unprotected anal intercourse in the previous six months. Higher endorsement of masculinity ideology was also positively associated with greater intentions for unprotected anal sex.

This study adds to the growing body of literature on the subject of gender ideologies and sexual behavior and offers additional avenues for public health research.

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CHAPTER 1

INTRODUCTION

Men who have sex with men (MSM)[1] continue to be a vulnerable population at risk for contracting HIV/AIDS. Despite the considerable efforts directed toward the primary prevention of HIV/AIDS, there is growing evidence to suggest increasing infection rates among subpopulations of MSM, causing some public health experts to speculate a possible resurgence of the epidemic (Wolitski et al., 2001). In general, epidemiologic surveillance of MSM is fragmented and affords limited generalizability; however, improved data collection and reporting from selected states provide strong evidence confirming increased rates of infection. Data from 29 states showed a 17% increase in new infections among MSM during the three-year time span between 1999 and 2002 (CDC, 2003). The number of HIV/AIDS diagnoses increased 11% among MSM between 2001 and 2005 (CDC, 2005). In 2005, MSM accounted for two-thirds of all new HIV infections among male adults and adolescents in the 33 states with long-term confidential name-based reporting (CDC, 2007). In this same year, homosexual contact was the source of infection for the overwhelming majority of new HIV/AIDS diagnoses among men (67%), followed by heterosexual contact (15%) and injection drug use (13%) (CDC, 2007).

Increasing HIV infection rates points to changing patterns of sexual behavior among some MSM, suggesting a trend toward increased risk-taking. Behavioral research

confirms the relatively high prevalence of risky sexual practices, such as having anal sex with a high number of partners and not using condoms during intercourse; however, sampling and measurement issues preclude definitive generalization regarding the prevalence of certain practices, like unprotected anal intercourse (UAI). Social prejudice and marginalization make probability-based sampling difficult with hidden populations like MSM. Furthermore, discrepancies in the measurements of UAI make comparisons across studies problematic. For example, some studies do not differentiate between UAI that occurs within the context of a monogamous or committed relationship versus that with anonymous or casual partners. Likewise, the use of a generic measurement for anal sex is problematic because it ignores the significantly greater risk for the receptive partner and it prohibits more detailed exploration of insertive and receptive anal sex as distinct behaviors with unique antecedents. Given these limitations, some estimate the prevalence of unprotected anal sexual practices to range between 14% and 45% (Guenther-Grey et al., 2005; Webster et al., 2003; Kalichman, Nachimson, Cherry, & Williams, 1998; Mansergh et al., 2002; Strathdee et al., 2000). One population-based study of MSM reported a 45% prevalence rate of UAI within the previous 12 months among 18 to 29 year olds, 31% occurring with non-primary partners (Webster et al., 2003). Some studies have demonstrated marked differences in prevalence of UAI among demographic groups. Bradford et al. studied demographic and behavioral characteristics associated with actual rates of HIV seroincidence and found that older men (mean age = 38.6) with a large amount of sexual partners were the most likely to report UAI and, subsequently, had the highest rate of seroconversion (2006).

Parallel increases in sexually transmitted infections (STIs) with similar infection patterns confirm the prevalence of these behaviors. For example, the incidence of gonorrhea and syphilis suggests significant increases in the high-risk sexual practices that lead to HIV transmission. In 2003, the Gonococcal Isolate Surveillance Project reported a 15.6% increase in positive test results for gonorrhea since 1988 among MSM (CDC, 2003). Similarly, increases in syphilis rates have also been found among MSM in several urban areas (Stolte & Coutinho, 2002). Collectively this body of research yields convincing evidence for a renewed focus of public health research and action directed toward the primary prevention of HIV/AIDS among MSM.

The focus of such activities should be on understanding and responding to the social, cultural, and psychological determinants of high-risk sexual behaviors. Innovative, theoretically driven research is needed in order to understand and formulate adequate public health responses. Reformulating the problem of HIV/AIDS among MSM within a social ecological framework allows for the identification of new variables that may yield promising findings for future research and program planning. Incorporating theoretical developments from the social and behavioral sciences can help to bridge the gap between seemingly disconnected risk factors. The result of such efforts can illuminate the complex relationships that exist between individuals and their social environment, and how together, through interacting systems, those relationships produce varying patterns of risk behaviors throughout a population.

Of particular interest to this research project are the ways in which broad social categories—such as gender—interact at the macro and micro levels to create dynamic

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trends in sexual risk-taking. Utilizing theories of gender and sexuality provides the theoretical basis on which gender is understood as a social category and not solely a proxy for biological sex. This approach deviates considerably from a categorical treatment of gender common to behavioral epidemiologic research. It also fits within a paradigm shift occurring in the emerging field of men's health that calls for a "gender-relations" approach that is "informed by a social approach of the kind that presently underpins the new public health," emphasizing the role played by social determinants of health and illness (Schofield, Connell, Walker, Wood, & Butland, 2000). This research sought to understand gender as a complex, multidimensional, sociocultural construct that structures sexual interactions and is therefore an important component of the social ecology of HIV/AIDS among MSM.

The broad objectives of the present work included the application of social constructionist and feminist theories of gender, sexuality, and power to a contemporary public health issue—HIV/AIDS risk-behaviors among MSM. This approach deviates from similar attempts to integrate theories of gender and power within public health research in that the focus was not on the deleterious effects on women but on a marginalized group of men. In this sense, this work offers a valuable contribution to the growing body of literature in men's health studies.

The specific aims of this research were to examine associations between cultural norms and beliefs surrounding men and masculinity (masculinity ideology) and sexual risk-taking among MSM. Masculinity is understood as a set of interconnected cultural beliefs and attitudes regarding the nature and appropriate behavior for the male gender.

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Masculinity ideology is a measure of the degree to which an individual endorses or internalizes these cultural standards of male behavior. In addition, some possible pathways in which masculinity ideology may lead to sexual risk-taking were considered, including the use of the Internet to meet sex partners and the use of drugs in conjunction with sexual encounters. These factors are important because there is evidence that they individually contribute to sexual risk-taking among MSM. They can also be understood as gendered health behaviors, structured by cultural norms and expectations for men. Specifying behavioral mechanisms that mediate the associations between masculinity and sexual risk-taking enables this research to elaborate on these relationships and theoretical underpinnings. Sexualized drug use, or drug use immediately before or during sex, and meeting sex partners online were empirically explored as mediating factors that both encourage and enable the social construction of masculinity.

In sum, the two main objectives for this research endeavor were to describe the sexual behaviors of a sample of MSM recruited through the Internet and to test a conceptual model based on cultural norms of masculinity as an explanatory factor in risk-taking behaviors related to HIV transmission.

CHAPTER 2

BACKGROUND

Several reasons for the increase in sexual risk-taking among MSM have been proposed. Among the more recent and prolific explanations found in the literature include changes in social norms reflected in the "barebacking" phenomena, the development and availability of highly active antiretroviral therapy (HAART), substance use, and the emergence of the Internet as a means to solicit sexual partners. Research exploring the ability of these factors to explain the prevalence of sexual risk-taking among MSM has garnered some empirical support; however, there are important theoretical and methodological limitations that should be considered. Furthermore, this line of research limits the analysis of sexual behavior to the individual level, failing to connect individual beliefs, attitudes and behaviors to overarching social institutions and cultural norms. In this chapter, the theoretical framework for such an approach is addressed, but first a brief overview of the current literature is warranted.

Barebacking

Typical public health campaigns seeking to prevent HIV infection among MSM focus primarily on increasing knowledge, self-efficacy, and access to condoms during sexual encounters. Largely informed by individual-focused psychological models of behavior change, these campaigns are based on the assumptions that high-risk sexual behavior results from uninformed, irrational or impaired decision making strategies. Recent research, however, suggests that many MSM are making rational, complex decisions regarding their sexual health that include risk-taking behaviors (Suarez and

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Miller, 2001). Rather than resulting from episodic lapses in otherwise consistent condom use, some MSM are intentionally forgoing the use of condoms during anal sex. Barebacking is the popular term used to describe unprotected anal intercourse (UAI). The initial use of this term within the context of sex between men has been traced back to an article written by Stephen Gendin entitled, "Riding Bareback" (Halkitis, Wilton, & Drescher, 2005). The article, published in 1997 in *POZ Magazine* (a magazine and website targeted to HIV-positive men), describes the author's personal desires and the desires of other HIV-positive men to abandon the use of condoms. It appears initially that barebacking was used to describe condom-less anal sex between HIV-positive men only; however, the term has since evolved to include a variety of unprotected sexual acts between men, and less commonly between men and women. It has also been established that a large majority of gay and bisexually identified men are familiar with the term (Mansergh et al., 2002 & Halkitis, Parsons, Wilton, 2003); however, the meanings they ascribe to it are varied. Halkitis, Wilton, & Galatowitsch found significant differences in the ways in which HIV^+ and HIV^- men defined barebacking (2005). HIV^- men were more likely to define barebacking as unprotected anal intercourse (UAI) that typically occurs between HIV-negative men, whereas HIV-positive men understood barebacking to include HIV-negative and positive men (Halkitis, Wilton, & Galatowitsch, 2005). In addition, some men understand the term to connote the intentionality of UAI and even the positions of the partners (either insertive or receptive).

Estimates of individuals reporting barebacking, when the term barebacking was undefined by the survey instrument, range as high as 45% of the sample (Halkitis,

Parsons, Wilton, 2003); however, in studies where barebacking was overtly defined as *intentional* UAI with a non-primary partner, the prevalence was 10% (Mansergh et al, 2002). Stressing the intentionality of unprotected sex in the definition of barebacking is of more importance to public health research because it represents more than condom-less sex. In this context, barebacking becomes a widely recognized rejection of institutionalized safer sex messages. The reification of barebacking as sociocultural practice is exemplified by recent studies that show barebacking has evolved into an identity among subgroups of MSM (Grov et. Al, 2007; Parsons, Bimbi, 2006). In their study of single or nonmonagamous MSM, 12% of men identified themselves as a "barebacker." Self-identified barebackers in this study were more likely to be HIV-positive, more likely to use drugs during sexual encounters, and reported more unprotected anal sex compared to non-identified Barebackers. It is clear from the research described here that barebacking is a current and evolving sociocultural phenomena that warrants separate consideration as a unique contributor to the observed increases in sexual risk-taking.

Highly Active Anti-retroviral Therapy (HAART)

The advent and availability of HAART may affect sexual risk-taking behavior in two distinct ways: by changing perceived risk or susceptibility of infection due to decreased viral loads; and, by decreasing perceptions regarding the severity of HIV infection (Huebner and Gerend, 2001). HAART has been shown to be an effective treatment leading to decreased viral loads in many HIV-positive men. This leads some to believe that UAI with an HIV-positive partner who is undergoing treatment is less of a

risk. Still others believe that HIV is no longer the serious disease it once was, in effect likening it to a chronic condition manageable with medication. Perceptions pertaining to susceptibility of infection as well as the severity of the disease have been found to be associated with sexual risk-taking (Kalichman, Nachimson, Cherry, & Williams, 1998; van der Snoek, de Wit, Mulder, & van der Meijden, 2005); however, these studies employed a cross-sectional design leaving the temporal direction of the relationships ambiguous. Findings from a recent prospective cohort study contests the inferred causative direction proposed by previous studies. Similar to these studies, the authors reported a positive correlation between treatment optimism and UAI with non-primary partners, but the temporal relationship of this association appeared to be contrary to expected findings (Huebner, Rebchook, & Kegeles, 2004). Treatment optimism resulting from the availability of HAART did not predict UAI, but rather those men who were already engaging in high-risk sexual behaviors were more likely to reference the availability of HAART as a reason for their risk-taking. In other words, the availability and effectiveness of HIV/AIDS treatments became more salient to those men engaging in sexual practices that put them at risk for infection. Focusing on the decreased transmission risk and disease severity thus becomes a rationalization used to decrease cognitive dissonance associated with high-risk behavior in the context of HIV/AIDS.

Substance Use

The use of alcohol and illicit drugs is another important factor to consider when exploring possible explanations for high-risk sexual behavior among MSM. Historically, people who seek out same-gender sexual relationships have been forced underground due

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to the social prejudice surrounding the expression of homosexuality. As a consequence, social organization for gays and lesbians has more or less centered on bars and dance clubs, where participants go to freely express their sexuality and create social relationships unfettered by heteronormative pressures. The subcultures formed out of these social processes exist outside of larger social mores and institutions that serve to constrain sexual behavior for many heterosexual adults. As a result, the norms governing many networks of MSM are nested in sexual institutions that provide the context in which HIV risk behaviors are cultivated. Green explains:

> Blocked from the institutionalized rites of passage that define and organize (heterosexual) adulthood, some gay men find that commercial sexual institutions have a powerful and enduring presence in their lives well past the age when their heterosexual counterparts move out of nightlife and into sexual trajectories tied to marriage and family. Indeed, for this latter group of men, commercial sexual institutions [bars, dance clubs, sex parties, bathhouses, etc…] come to replace marriage and family as a primary vehicle for anchoring social and sexual life. (2003)

This is the context in which high-risk sexual behavior among many MSM must be understood. It is through interaction with dominant cultural norms regarding sexuality that such marginalized, alternative, social institutions are created. These institutions have direct effects on the formation of social and sexual interactions among MSM that include substance use and HIV risk. This is particularly true for young men and adolescents whose primary socialization into gay community centers around commercial sexual

institutions; however, research highlights the prevalence of alcohol and drug use among MSM of all ages.

Data from a probability sample of urban dwelling MSM found a high prevalence of alcohol and illegal drug use (Stall, Paul, Greenwood, et al., 2001). While the rates of alcohol use were roughly comparable to those of males in the general population, the prevalence of illegal drug use is 10 times greater in urban dwelling MSM as compared to all males 12 years of age or older (Stall, Paul, Greenwood, et al., 2001;University of California San Francisco, 2006). Other studies have found an association between increases in the use of "club drugs[2]," such as Ecstasy, Ketamine, GHB, and Methamphetamine, and high-risk sexual behaviors (CDC Fact Sheet, 2006). McKirnan et al. found that those who frequently combined drugs with sex were more likely to report higher rates of UAI with non-primary partners as well as higher rates of Hepatitis B infection (2001).

Methamphetamine (also known as meth, crystal, ice, Tina, crank, speed), in particular, has received considerable media attention for its popularity among MSM and its use in the gay circuit club scenes as well for its use during sexual activity. Research indicates that MSM who use methamphetamines are 2 to 3 times more likely to engage in high-risk sexual behavior (University of California San Francisco, 2006; Hirshfield, Remien, Walavalkar and Chiasson, 2004; Mansergh, Shouse, Marks, et al., 2006). In one study, methamphetamine users were more than twice as likely to engage in receptive but not insertive anal intercourse (Mansergh, Shouse, Marks, et al., 2006). The differential rates of UAI for receptive and insertive partners reflect important physiological effects of

methamphetamines, in particular the drug increases sex drive but decreases the ability to get and maintain erections. The physiological suppression of erections explains the higher proportion of men using methamphetamines during receptive sex as well as the frequency with which methamphetamines are combined with erection enhancing drugs such as sildenafil (Viagra). In fact, the same study found a significant association between the use of sildenafil and unprotected insertive anal sex (Mansergh, Shouse, Marks, et al., 2006). These studies highlight the relevance of drug use as a contextual factor important to social ecological models of HIV/AIDS risk; however, these studies fall short of providing a causative explanation for high-risk sexual behaviors. In other words, using methamphetamines and other drugs appears to coincide with certain sexual practices, like UAI, but may not be a fundamental cause of them.

The causal relationship between substance use and high-risk sexual behavior is equivocal. The temporal relationship is confounded by a lack of experimental and longitudinal studies. Furthermore, research regarding individual expectations for the effects of drugs and alcohol add complexity to these relationships. Motivated by the need to escape "self-awareness of personal vulnerability to HIV," individuals may turn to drugs or alcohol to "shift self-awareness from the abstract or long-term implications of [their] behavior to immediate, 'here and now' sensations or actions" (McKirnan, Vanable, Ostrow & Hope, 2001). Individual expectations for this kind of temporary escape have been found to be important considerations explicating the relationship between recreational substance use and high-risk sexual behaviors. One study found that expectancies of sexual "escape" directly modified the association between substance use

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during sex and UAI (McKirnan, Vanable, Ostrow & Hope, 2001). The use of substances in this study represented an active strategy to decrease cognitive dissonance resulting from risky sexual behavior. The authors noted that neither "habitual use nor exposure to substances induced risks." Rather, risks were pronounced among men who reported strong expectancies for "cognitive escape" through the use of substances (McKirnan, 2001). Therefore, drug use and high-risk sexual behavior appear to have common antecedents but may not constitute the simple linear relationship typically proposed.

A qualitative study that explored the contextual antecedents of methamphetamine use among gay and bisexual men in Manhattan illuminates the statistical associations reported in the literature. This study found that apart from individual level factors, such as self-esteem and desire to form social connections, methamphetamine use represented an attempt to "negotiate sexual sociality and increase sexual pleasure" (Green and Halkitis, 2006). These findings are mirrored by another qualitative study that found empirical support for two dependent but distinct motivations for "club drug" use among gay and bisexual men: "Drugs for sexual performance" and "drugs for community" (Green, 2003). Drugs for sexual performance represent strategies to "negotiate tensions that arise from sexualized interactional patterns within urban gay communities" (Green, 2003). Men reported drug use in this context in order to take advantage of the psychosocial and physiological effects of the drugs, such as an increase sexual desire, longevity, and self-confidence, as well as to provide an anesthetic agent for sexual encounters that "push the body to new limits" (Green, 2003). Men also reported using drugs in order to "experience membership in large social venues among participants who

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might otherwise have little in common, or hold little knowledge of each other" (Green, 2003). In this case, drug use represented an active strategy to create temporary communities where users experience decreased social inhibitions, decreased self-consciousness, and increased sense of intimacy and solidarity (Green, 2003).

The Internet

Recent research has focused on the Internet as a medium facilitating risk behavior for HIV/AIDS transmission. One frequently referenced outbreak investigation implicated a particular chat room as the common factor in four out of six cases of syphilis among MSM in San Francisco (Klausner, Wolf, Fischer-Ponce et al, 2000). Several studies have declared the importance of the Internet in providing a social space for men to meet other men who are seeking sexual encounters (Bull & McFarlane, 2000; Kim, Kent, McFarland, & Klausner, 2001; McFarlane, Bull, & Rietmeijer, 2000). In this sense, the Internet plays a role similar to bathhouses and other venues utilized by men to arrange anonymous sexual encounters; however, the Internet is unique in that it provides a "virtual" meeting place for men to efficiently seek sexual encounters outside the confines of physical venues like bathhouses, which are to some extent identifiable and controlled environments. Sexual encounters first initiated through Internet communication may occur in private residences or other agreed upon public venues. The Internet also expands the ease and availability of meeting casual sex partners for men in rural areas or places without established gay communities. This enables some men to participate in certain sexual practices they may have otherwise not had the opportunity because of issues of anonymity or lack of information regarding active sexual venues.

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Furthermore, the Internet as a social environment structures sexual interactions in ways that may affect the spread of HIV. For instance, many Internet sites used by men to meet sexual partners enable them to communicate facts about themselves through web-based profiles, resulting in a type of catalog of potential sexual partners that can be searched for a variety of characteristics, including HIV status. The availability of such information may be considered a positive aspect of the Internet for it allows for a quick and efficient way to screen out serodiscordant partners; however, evidence suggests that many of the men who may describe themselves as HIV-negative may not be aware of their actual HIV/ADIS status due to lack of sufficient testing or may intentionally misrepresent themselves. Furthermore, the availability of this information removes the need for sexual partners to discuss HIV status and may provide a false sense of safety.

Another way in which the Internet may facilitate HIV transmission is by bridging previously disconnected social networks of individuals most likely to engage in high-risk sexual activities. Boily, Hogben, and Bastos have argued that non-volitional changes in sexual risk-taking occurred after the initial AIDS epidemic due to population-level changes in the "pool of high-risk taking individuals" that resulted from high mortality rates (2005). Today those individuals would have the opportunity to remain sexually active due to treatment advances (such as HAART) increasing the pool of "high-risk taking" individuals. The Internet could exacerbate this process by providing a medium in which high-risk individuals are able to locate one another. By bridging these types of networks, the Internet can significantly impact the spread of HIV. These examples highlight the ways in which the Internet may facilitate high-risk sexual behavior and

consequently the spread of HIV, but once again, they do not suggest that the Internet is a cause of this behavior. Missing from this explanation and the other explanatory factors previously described is a focus on sexuality as a socially embedded practice.

THEORETICAL FRAMEWORK

Fundamental to the success of HIV prevention is a comprehensive understanding of human sexual behavior. The ability of public health analysis to explain, and subsequently respond to, patterns of sexual behavior labeled as "high-risk" depends on the capacity of behavioral epidemiologic research to account for a wide range of intrapersonal, contextual, and societal factors. The social psychological models of health behavior commonly employed in research on HIV/AIDS fail to acknowledge the social nature of the epidemic. Typically focused on individuals' perceptions of the disease and their confidence and ability to use prophylactics, these models fail to address the HIV/AIDS epidemic as an "epidemic of desire" (Dowsett, 2003) propagated by human sexuality. An alternative approach recognizes sexual behaviors as meaningful and pleasurable "socially embedded" practices. The subjective meanings and corporeal pleasures resulting from these sexual practices rely on context, which in turn exemplifies culture, and is ultimately structured by history and discourse (Dowsett, 2003). This line of reason relates individual acts to dynamic social institutions that structure the contexts in which sexuality is defined and performed. Gender represents one such social institution and is the focus of this study. Of particular interest are the ways in which broad social categories, such as gender, interact at the individual level to create predictable patterns of high-risk sexual behaviors.

Until recently the study of gender and health has been nearly synonymous with the study of women's health (Schofield, Connell, Walker, Wood, & Butland, 2000). Additionally, much of public health research operationalizes gender as a single variable that represents two dichotomous levels ("male" or "female"); thus, gender as a social process, is typically ignored. Instead, gender serves as a proxy measure for biological sex. Some have argued for a new classification of gender and in turn a paradigm for understanding women's and men's health (Schofield et al., 2000). The theoretical framework proposed to guide this analysis draws from several areas of gender and feminist theories.

West and Zimmerman's reconceptualization of the sex/gender dualism as three analytically independent categories is used to explore the relationship between the biological and social dimensions of gender and how these distinctions help to explain the construction of gender in everyday interactions (1987). This process of constructing a gendered self is embedded in preexisting power structures that determine the resources available to an individual for the performance of gender. In other words, gender is multidimensional and is hierarchically ordered by institutional power structures. Research exploring these types of relationships has generally focused on the impact of gender inequality on women's HIV risk. Wingood and DiClemente utilized a theory of gender and power in order to outline a framework in which to understand women's unique exposures, social and behavioral risk factors and biological properties that interact to create vulnerability for HIV infection (2000). Their analysis offers detailed consideration of the multiple levels in which gender inequalities impact women's HIV

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risk starting with the most distal, societal level and narrowing down to proximate variables such as personal and biological risk factors. For instance, social norms and expectations structure interpersonal relationships and other social institutions like churches and families. In turn, these social institutions affect individual exposures to HIV by proscribing or prescribing patterns of sexual behavior. This in-depth analysis of gender as a social structure opens multiple avenues for public health research and strengthens social ecological models of HIV/AIDS. Similar analysis that incorporates gender as a structuring variable across multiple levels is needed when considering men's HIV/AIDS risk. Fortunately, the lack of scholarship in this area is changing with the growth of the men's health movement, which has stimulated research on the effects of masculinity on health (Sabo, 1995). International efforts have recently focused attention on the importance of understanding the ways in which gender relations and gender ideologies affect men's sexual behavior in relation to the HIV/AIDS epidemic (UNAIDS, 2000). This study is envisioned as a small piece of this larger body of research.

The Social Construction of Gender

West and Zimmerman argued that the widely recognized conceptualization of sex and gender, where sex is the biological and gender is the social category, is not sufficient for an adequate understanding of the relationships between the biological and social categories and the situational nature of "doing gender" (1987). They proposed, instead, that sex, sex categories and gender be treated as distinctly independent. In this sense, sex describes the biological criteria used to separate males from females. The criteria used for this purpose, as well as the motivation to make the distinction at all, are social

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pronouncements that manipulate biological, physiological and/or genetic information in order to validate existing cultural beliefs about gender (Fausto-Sterling, 2000). Because these biological criteria are not readily available for evaluation in everyday social interactions, sex categories stand as proxies for biological sex. It is the sex category that individuals express through these interactions. This is accomplished by conforming to the socially prescribed behaviors and displays appropriate for one's sex category. Gender, then, becomes the activities utilized to manage the perception of one's sex category and also the framework used to interpret the sex category of others.

The resources used to manage an individual's gender come from socially constructed differences between men and women or boys and girls. Behaviors, attitudes and beliefs are categorized as male, female, or neutral. Individuals can pull from this knowledge acquired through socialization and manipulate it in order to represent themselves according to their specific goals in specific situations. The motivation to accurately represent one's self accordingly is very strong, and defying society's gender norms often results in serious consequences. Because of the ubiquity of gender in social interactions, individuals are consistently held accountable for the accurate representation and maintenance of their sex category. As a result, "doing" gender "appropriately" is an important aspect of an individual's sense of him or her self as a competent social actor. The "appropriateness" of the gendered self is determined by institutional power structures that order social classifications, such as race/ethnicity, class, and sexuality into hierarchies of privilege and marginalization. The result is a plurality of femininity and masculinity.

Theories of Masculinities

Social psychological research has generally taken two distinct theoretical approaches to the male gender or masculinity. The "trait" approach, based initially in psychoanalytic theory and then later in theories of personality, focuses on the "extent to which men actually have characteristics culturally defined as masculine (Pleck, Sonenstein and Ku, 1993). A single construct is often used to place individuals on a continuum ranging from more to less masculine based on characteristics such as being active, instrumental, and tool-oriented (Smiler, 2004). The "normative" approach, informed largely by a social constructionist paradigm, focuses on the extent to which one believes that men *should* have the characteristics culturally defined as masculine. Characteristics of appropriate male behavior revolve around themes of emotional stoicism, status-orientation, dominance, aggression and independence. This distinction between the trait and normative approaches, while on the surface seems slight, completely transforms the ways in which masculinity is conceptualized and empirically measured. The former approach positions masculinity within the individual as a stable personality trait, whereas the later views masculinity as culturally defined and acted upon by individuals through performative aspects of behavior. In other words, masculine men are viewed as such not because they possess some stable constellation of "male" or "manly" traits but because they represent physically, and conform behaviorally, to cultural definitions and expectations of how men should look, behave, think, and feel. By conceptualizing masculinity in this way, theoretical analysis is better able to explain the historical evolution of standards of masculinity as well as the social variations that exist

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among different groups. This also enables the conceptualization of multiple masculinities and femininities embedded in social relations of "alliance, dominance, and subordination" (Connell, 2005), thus allowing for more nuanced analysis of the construction of gender over multiple dimensions of social positions, including race/ethnicity, class and sexuality. In other words, by using a plurality of masculinities and femininities, gender can be understood at multiple levels of meaning (Knaak, 2004). For instance, "doing" masculinity for a white, heterosexual, married, middle-class man would most likely result in a very different masculinity than the one constructed by a black, bisexual, working-class man. The differences arise from the dominant position of one over the other: In this case, the dominance of white over black, heterosexual over bisexual, and middle class over working class. The power to dominate is provided by the institutionalization of patriarchy that determines "legitimacy" of one form over another. Connell refers to this as hegemonic masculinity. He explains:

> Hegemonic masculinity can be defined as the configuration of gender practice which embodies the currently accepted answer to the problem of the legitimacy of patriarchy, which guarantees (or is taken to guarantee) the dominant position of men and the subordination of women. (2005)

Hegemonic or normative masculinity not only guarantees the dominance of men over women but also the dominance of men over other men. The fundamental notion lies in the legitimization of certain groups of men who occupy specific social positions. Therefore, working-class men lack access to social and political power needed to construct a hegemonic masculinity; however, this is not true across all contexts.

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Working-class men are excluded in various contexts but still participate in the construction and legitimization of hegemonic masculinity (Connell, 2005). Drug use, crime, and violence are all intimately related to cultural standards of masculinity—such as the need for dominance, aggressiveness and acceptance of risk-taking—and are readily available to working-class men as resources for the performance of male hegemony. This is equally true for gay, bisexual, and other MSM since homosexual desire currently assumes a marginalized position in contemporary society. But this is not to say that these men do not actively participate in the construction and legitimization of dominant or hegemonic standards of masculinity. Instead, they may in fact over-conform to aspects of hegemonic masculinity in order to engage the gender system and the marginalized status of same-sex desire. For instance, expressing anti-feminine attitudes towards effeminate behaving men (Taywaditep, 2001) or endorsing emotionally detached and goal driven sexuality are both ways in which gay, bisexual, and other MSM may actively participate in the construction of hegemonic masculinity.

In order to statistically explore the patterns and effects of hegemonic masculinity among larger groups of men, the concept of *masculinity ideology* was created (Pleck, Sonenstein, and Ku, 1993). Masculinity ideology is defined as the "beliefs about the importance of men adhering to culturally defined standards for male behavior" and is operationalized by measures of "attitudes toward the male gender role" (Pleck, Sonenstein, and Ku, 1993). Congruent with a social constructionist account of masculinity, instruments designed to quantify masculinity ideology measure an individual's endorsements or internalizations of the culturally "appropriate" behavior for

men. In other words, masculinity ideology is a measure of an individual's endorsement of hegemonic norms of masculinity. Individual endorsements of hegemonic norms of masculinity become important to public health research when those norms have deleterious effects on men's health behaviors.

Masculinity and Health

Health beliefs and behaviors are a resource for both men and women in the construction of masculinity and femininity. Some have described health related behaviors and cognitions as a form of "currency in the transactions that are continually enacted in the demonstration of gender" (Courtney, 2003). In this sense, health beliefs and behaviors are resources utilized by individuals for the social construction of gender. Researchers have demonstrated that some men who adopt traditional beliefs about masculinity may engage in behaviors that have greater health consequences than other males with less traditional beliefs about masculinity (Courtenay, 2003). For instance, men who hold more traditional beliefs about masculinity may be more likely to smoke, use alcohol and drugs, and engage in more risky behavior (Courtenay, 2003). Courtenay theorizes:

> …denial of risk and other unhealthy behaviors are used by men in the negotiation of social status and to enact idealized forms of masculinity that enable them to assume positions of social power relative to women or less powerful, marginalized men, such as gay and lower class men. (2000)

Pleck, Sonenstein, and Ku provided empirical support for a social constructionist view of masculinity and its relative association with measures of sexual behavior (1993). Using data from the National Survey of Adolescent males, they found that among males ages 15

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to 19, higher scores on their masculinity scale were positively correlated with number of sexual partners, negative attitudes toward condom use, and less overall condom use. Shearer partially replicated these findings on a sample of male and female college students using the full version of Thompson and Pleck's Male Role Norms Scale (1986). She found that masculinity ideology was a significant predictor of three sexual behavioral outcomes: sex without a condom, engaging in casual sex, and endorsement of risky condom-related beliefs (Shearer, 2005). In particular, she found that the "antifemininity" subscale of the MRNS was positively related to all three outcomes. Expanding this line of research, Noar and Morokoff conducted a similar study on a sample of male college students. They found that higher endorsement of masculinity ideology as measured by the MRNS was related to more negative attitudes related to condom use but was not directly related to condom use (Noar and Morokoff, 2002). Instead, they found support for an indirect relationship between masculinity ideology and condom use that operates through condom related attitudes.

These findings are also supported by similar findings from qualitative research. A study conducted by the San Francisco AIDS Foundation focused on the social contextual and situational circumstances surrounding UAI among self-identified gay and bisexual men. The researchers concluded from open-ended interviews that many men who engaged in UAI did so in order to meet non-sexual needs relating to a broad array of factors including the need to affirm masculinity (Executive Summary of the SF AIDS Foundation's Qualitative Interview Study, 1997). The men reported that at times these non-sexual needs overpowered their concern for possible infections that might occur as a

result of their behavior. Another qualitative study that focused specifically on barebacking found that sexual acts and encounters took on multiple meanings for their participants and that these meanings were organized around concepts of masculinity (Ridge, 2004).

The research summarized here underscores the importance of gender and masculinity in a comprehensive understanding of sexual risk-taking; however, these relationships require further study. These findings need to be replicated among more diverse samples of men that include MSM. Furthermore, there is no consensus regarding a gold standard measure of masculinity. Each of the studies previously described utilized the MRNS; however, the evolution of masculinity measurements is extensive and reflects important developments in the theories of gender and sexuality (Smiler, 2004). This body of literature can be strengthened if consistent associations described previously can be substantiated with other measures of masculinity. Exploring the relationships of masculinity and sexual behaviors among gay, bisexual, and other MSM is a necessary step toward a comprehensive understanding of gender as a social determinant of men's health and illness.

Therefore, this research project seeks to explore the relationships among masculinity and high-risk sexual behavior. Others have proposed that masculinity is constructed among MSM through the use of culturally available sexual scripts that emphasize sexual conquest, emotional detachment, and the "pursuit of sexual gratification for its own sake, and by the association of danger and excitement" in sexual encounters (Levine & Kimmel, 1998). If MSM do utilize such scripts to define and

construct masculinity through sexual encounters, then it would follow that engaging in "safe" responsible sex is counter productive. If "[s]ex is about danger, excitement, risk" then safe sex is about "comfort, security and softness" (Levine & Kimmel, 1998). By this logic, norms of masculinity may encourage sexual risk-taking among MSM who judge these norms to be indicative of the way "men are" or "should be."

CHAPTER 3

METHOD

Study Design

This study utilized a cross-sectional self-report survey design. Items used to measure the constructs under investigation were taken from previous research when available or developed specifically for this study. Participants were recruited and the data were collected using the Internet.

Study Objectives

The goals of the current study were to: (1) describe the sexual behaviors of a sample of MSM recruited from the Internet focusing on high-risk behaviors that could lead to HIV infection/transmission; (2) determine the prevalence of recreational drug use (in particular "Club Drugs"), focusing specifically on use before and/or during sex; (3) ascertain the importance of the Internet in meeting sex partners; (4) explore the association between concepts of masculinity and high-risk sexual behavior and intentions; (5) explore possible mediating effects of sexualized drug use and using the Internet to meet sex partners. The proposed relationships are summarized in Figure 1. The following hypotheses are offered:

Hypothesis 1: Masculinity Ideology will be independently associated with the number of sexual partners over the previous six months both as the insertive (Top) and receptive (Bottom) partner.

    a. Masculinity Ideology is positively associated with the total number of sexual partners where the respondent was the insertive partner (Top) in the past six months.

    b. Masculinity Ideology is positively associated with the total number of sexual partners where the respondent was the receptive partner (Bottom) in the past six months.

Hypothesis 2: Masculinity Ideology is positively associated with the frequency of unprotected anal intercourse during the previous six months both as the insertive (Top) and receptive (Bottom) partner.

    a. Masculinity Ideology is positively associated with the frequency of insertive unprotected anal intercourse (IUAI) in the previous six months.

    b. Masculinity Ideology is positively associated with the frequency of receptive unprotected anal intercourse (RUAI) in the previous six months.

Hypothesis 3: Masculinity Ideology is positively associated with the intention to seek out bareback sexual encounters.

Hypothesis 4: Substance use before or during sex and using the Internet to meet sex partners will partially mediate the association between masculinity ideology and a dichotomous measure of high-risk behavior (Unprotected Anal Sex in the previous months).

Figure1. Conceptual model of Masculinity Ideology and High-Risk Sexual Behavior.
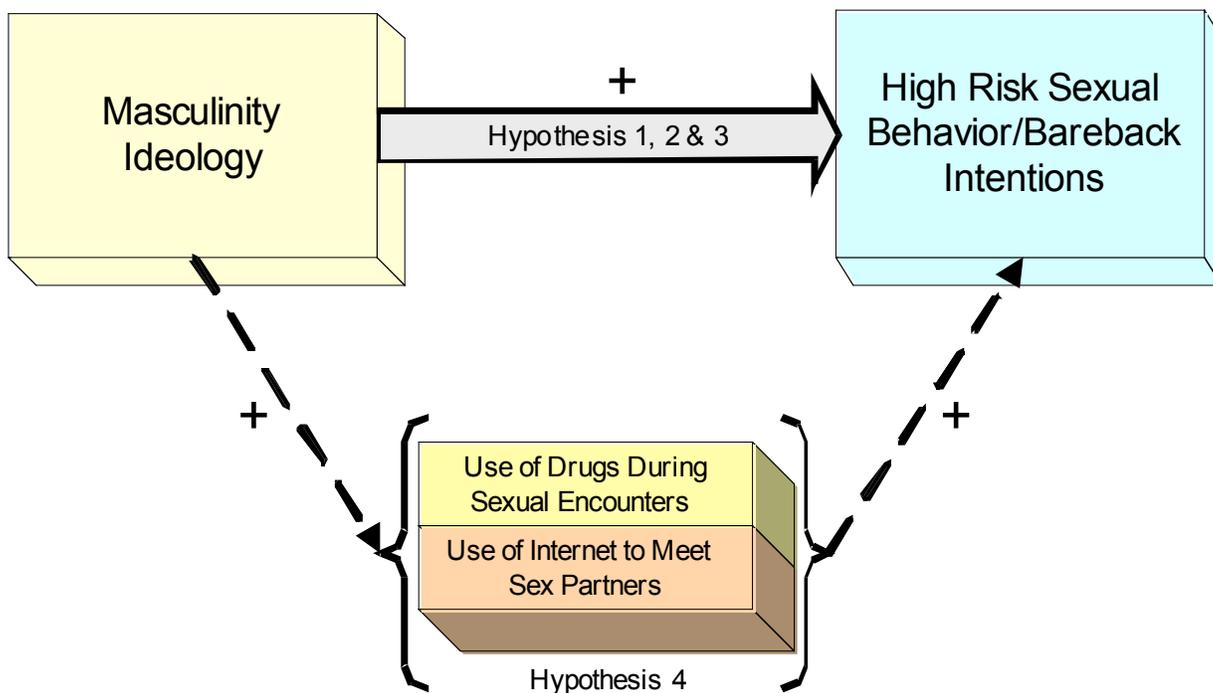
Internet-based Research

      An increasing number of researchers are turning to the Internet as a means to

collect both quantitative and qualitative data (Mann, 2000), including those who have

used the Internet to study sexual risk-taking behavior among MSM (Bull & McFarlane,

2000; Bull, McFarlane, Lloyd, & Rietmeijer, 2004; Elford, Bolding, Davis, Sherr, &

Hart, 2004; Rhodes, DiClemente, Cecil, Hergenrather, & Yee, 2002).

      There are several advantages to using the Internet to recruit participants as well as

a data collection tool. For instance, it provides the ability to reach geographically,

socially isolated, or "hidden" populations that may not have been available otherwise.

This offers a great advantage when conducting research with MSM populations. One

major limitation of much of the sexual health research focusing on MSM is the use of convenience samples recruited from established gay venues or street-intercept surveys (Mansergh et al, 2002; Halkitis, Parsons, Wilton, 2003; Halkitis, Wilton, Wolitski, et al., 2005, Parsons & Bimbi, 2007). Much of this research takes place in large urban cities within well-established gay communities and may not be generalizable to MSM who reside outside these urban centers. The Internet provides a means to recruit MSM from a variety of Internet "venues" that attract a diverse sample of men. This includes gay and non-gay identified men who are not acculturated into an established gay community as well as MSM from rural communities or cities without a gay "scene."

A second advantage of conducting Internet-based research is the flexibility of time and resources. By recruiting participants and administering surveys online, researchers can eliminate some of the material and non-material costs of research, which includes time needed to recruit and administer surveys as well as the monetary associated costs (e.g. paper, postage, research assistants, data entry, etc.). In the past few years there has been an increase in the availably of prepackaged software specifically designed to assist researchers in conducting web-based studies. The cost and functionality of these packages vary considerably; therefore, the use of such packages depends highly on the actual needs of each research project (Wright, 2005).

Furthermore, by recruiting and collecting data online, participants are able to respond with a greater degree of actual and perceived anonymity. This is a major advantage when collecting sensitive information like sexual histories and is especially relevant when collecting this information from a socially stigmatized population like

MSM (Rhodes, Bowie & Hergenrather, 2003; Riggle, Rostosky & Reedy, 2005).

Therefore, Internet-based research may help to decrease social desirability bias, which is a major concern with face-to-face interviews (Rhodes, Bowie & Hergenrather, 2003). Conversely, increased anonymity means decreased control over who responds to the survey as well as the conditions surrounding its completion.

Other concerns associated with Internet-based research include differential rates of Internet access among socioeconomic groups as well as methodological issues related to the ability to generate a probability sample. Recent scholarship in these areas indicate that, as the cost of personal computers has decreased along with the ubiquitous presence of computers in public domains, the percent of individuals with Internet access continues to increase and at the same time the demographic profile of Internet users is beginning to normalize (Rhodes, Bowie & Hergenrather, 2002; Yun & Trumbo, 2000). There are, however, issues regarding the representativeness of samples derived online; therefore, the results of Internet-based studies should be interpreted with these limitations in mind. Particular to this study and many others, the use of convenience samples limits the generalizability of the results. And while random sampling is possible in certain cases, too often random sampling is not feasible and is especially difficult in this type of Internet-based research; however, this is hardly an issue unique to web-based research.

Ethical Issues in Internet Research

In addition to these methodological issues, there are a number of ethical challenges to consider when conducting web-based research. Similar to the methodological concerns addressed, there are some unique ethical problems raised by

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Internet research. A workshop convened by the American Association for the Advancement of Science (AAAS) underscored several ethical considerations specific to Internet research. Among these is the anonymity of online participants, the complexities of obtaining consent, the issues of privacy, and the difficulty in transferring traditional standards of public and private domains to Internet research (Frankel and Siang, 1999). Some of these issues, such as the disagreement over the public/private distinction, are important consideration for research conducted with online communities or communications. For the purpose of the present study, the Internet was used as a means of recruitment and survey delivery. Online conversations or other communications were not recorded. To ensure the protection of the participants of this study as highlighted by the CITI Course in The Protection of Human Research Subjects, the following procedures were followed: Consent from participants was obtained prior to the completion of the survey; Participants were asked to read a written statement containing the basic elements of consent as well as the requirements for participation (e.g. must be 18 years old or older); and, then offer their consent by clicking on a link to begin the survey. The risk involved to participants was considered minimal; however, the survey did ask sensitive questions that may be perceived as intrusive or inappropriate by some. Full disclosure of the personal nature of the survey was included in consent form. Finally, no identifying information was collected from participants to ensure their confidentiality. Approval from the University of South Florida's Institutional Review Board was given prior to data collection.

A non-random convenience sample was used for this analysis. All participants were recruited via the Internet and completed a web-based survey instrument. The target population included single, sexually active MSM between the ages of 18 and 65 who were able to read and comprehend English. Participation was not limited to those who met inclusion criteria in order to maximize the sample size by not discouraging potential respondents with the use of access passwords and other such restrictions.

Recruitment

The first step in the data collection phase was to construct a website to promote the study and provide information about the study to visitors. Potential participants were referred to this website by all subsequent recruitment strategies. The primary recruiting strategy utilized electronic postings and ads placed on Internet websites frequented by MSM such as weblogs, social and sexual networking sites, and listservs. The administrators of these sites were contacted and asked to post an ad or description of the study as well as a link to the study's website. Some visitors of these sites in turn posted descriptions of the study on their own sites. An open-ended item at the end of the survey inquiring how participants were referred suggested that the majority of respondents were initially referred to the survey website from these electronic postings on weblogs and message boards. This was confirmed by the statistics available from a web counter installed on the site that tracked the number of visitors as well as the originating websites from which the visitors were directed. According to this information, a majority of

visitors were referred from weblogs and Internet sites that had a description and link to the survey, all of which catered to a variety of MSM.

A second recruiting approach included the use of personal contacts and acquaintances who initiated a snowball sample by emailing a link to the survey to their contacts, who in turn emailed a link to the survey to their own contacts. All potential participants were directed to the study's website. This strategy accounted for the rest of the sample; however, a small percent of respondents indicated that they came across the survey while "surfing the Internet."

Procedure

After being directed to the study's website, participants were presented with information about the study, including an electronic consent form. Visitors were asked to read the information and offer their consent by clicking a button that directed them to the actual survey instrument. The survey instrument contained seven sections presented in chronological order beginning with demographic and background information followed by sections dealing with sexual venues, recent sexual encounters, barebacking, substance use, masculinity ideology, and health. No identifying information was collected from the participants. They were asked for the month and year of their birth and the first three numbers of their ZIP codes. This information was used to calculate participants' ages and to check for duplicate responses. After completing the survey, respondents were directed to a separate page thanking them for their participation. This page also included contact information for the researcher as well as links to relevant HIV/AIDS educational sites.

Analytic Sample

A total of 4,126 respondents initiated the survey and completed the demographic prescreen questions. There was a surprisingly large international response to the survey (n=1456) that was unanticipated in the proposal process. It was decided that these participants would not be included in the analytical sample for two reasons. Firstly, upon preliminary screening of the data, it appeared from open-ended responses that there were some language barriers with some of the international respondents. Furthermore, the masculinity scale used in the current study was developed with a sample drawn from a U.S. population of men, and therefore psychometric data was not available for international samples. In an effort to maintain the validity of the survey instrument, it was decided to limit this analysis to U.S. residents only.

The analytical sample was refined further by eliminating those that did not meet inclusion criteria. This included those individuals who reported being female, in a current relationship, having no sexual contact with males during the previous year, and those outside the age requirement. In addition, five duplicate responses were found and subsequently removed. Attrition was high as 340 respondents logged off the survey before completing the masculinity scale. These cases were deleted because of a substantial amount of missing data on key variables. For those remaining participants with less than 20% missing items on the masculinity scale, mean item imputation was used to replace missing data (Roth, Switzer & Switzer, 1999). The resulting analytical sample consisted of 907 cases.

MEASURES

Demographic and Descriptive Information

The survey instrument contained questions about participants' ages, years of formal education, race/ethnicity, country of residence, and the first three numbers of U.S. ZIP code (this information was be used along with year of birth in order to search for replicated data). Participants were also asked about their HIV status, any recent STIs, and frequency of HIV testing.

Sexual identity was an important descriptive characteristic; particularly in this study because the recruiting strategy did not focus exclusively on self identified gay men. Assessing the degree to which the sample identified as gay, bisexual or heterosexual was important in determining the degree to which the research findings could be generalized to non-gay identified MSM. Because discordance between self-reported sexual orientation and actual behavior has found to be associated with demographic characteristics (i.e. race/ethnicity and education level) as well as lower condom use and HIV testing (Pathela, Hajat, Schillinger, Blank, et al, 2006), sexual orientation was assessed with a question of sexual identity (e.g. gay, bisexual, heterosexual) and a question about the sex of previous sexual partners (men only, females only, both males and females).

Sexual Behavior

Sexual behavior was measured by asking several questions about sexual activity in the previous six months. Respondents were asked to report the total number of partners with whom they had anal sex, differentiating between insertive and receptive partners.

Responses were open-ended to minimize response bias. Similar measurements of self reported sexual behavior have been evaluated and found to be reliable (Catania, Gibson, Chitwood, & Coates, 1990; Kauth, St. Lawrence & Kelly, 1991). Furthermore, using aggregate data as a proxy for the more rigorous detailed partner-by-partner analysis of HIV risk has also be found to be reliable (Pinkerton, Benotsch & Mikytuck, 2007). In addition to the total number of partners, the frequency of insertive and receptive anal sex without condoms was measured on a 6-point scale ranging from "not at all" to "50 or more times."

Barebacking Intentions

Intentions for barebacking was assessed by five items that asked participants to agree or disagree on a 5-point scale to statements such as "I purposely seek out bareback sex (no condoms) as a top," "I don't seek out bareback sex, but if it happens that's okay only if I'm the bottom" and "I consider myself a Barebacker." These items were used in previous research (Grov et al., 2007; Parsons & Bimbi, 2007); however, they were not combined as a scale in these studies. The prevalence of harm reduction strategies, such as strategic positioning, highlights the importance of analyzing insertive and receptive anal sex as separate behaviors (Grov et al., 2007; Parsons et al., 2005; Kippax & Race, 2003). Rather than analyzing intentions for bareback sex separately for receptive and insertive sex, this study combines the five items into a single index of barebacking intentions. This was done in an effort to reduce the number of outcome variables. The items demonstrated good internal consistency (alpha=0.87) lending empirical support to this decision. A higher score on this scale indicates greater intentions for unprotected anal sex.

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Internet Use

Two items measured the frequency of using the Internet for seeking and meeting sexual partners within the previous six months. Participants were asked how many times in the last six months they used the Internet "to find a hookup (casual sex partner)" and about how often they met and had sex with a guy they met online. Responses were recorded on a 6-point scale ranging from "not at all" to "50 or more times." This analysis was most interested in qualitative differences between those who have had sex with a partner they met online in the previous six months and those who have not. Therefore, a dichotomous measure of using the Internet to meet sex partners was created for regression analysis.

Substance Use

Participants reported yes or no to any use of the following substances: alcohol, Viagra, Methamphetamine, 3-4 methylenedioxy- methamphetamine ("Ecstasy"), Ketamine, inhalant nitrates ("Poppers"), Gamma Hydroxybutyrate ("GHB"). Only substance use in the last six months that occurred immediately before or during sexual activity was measured. A global measure of drug use was not used due to questions regarding their utility in evaluating associations with sexual behavior. Measures of substance use during and or before sex have been shown to be more useful in establishing associations with sexual risk-taking (Leigh & Stall, 1993); similar measures have been used in other research on MSM (Kalichman, Heckman, & Kelly, 1996; McKirnan, Vanable, Ostrow & Hope, 2001). A dichotomous measure of drug use was created for regression analysis. Men who reported any use of methamphetamine, ecstasy, Ketamine,

inhalant nitrates, or GHB were categorized as recent drug users in sexual context.

Masculinity Ideology

It has been argued that there are two distinctly independent categories of masculinity measurements; one measures gender orientation, and the other measures gender ideology (Thompson, Pleck, & Ferra 1992; Thompson & Pleck, 1995). The instruments grouped into these categories were developed under notably different theoretical frameworks. The current research conceptualizes sexual behavior as a means by which men participate in gender relations. Therefore, it is necessary to utilize masculinity instruments that were developed using a social constructionist view of gender. Such an instrument would seek to tap into an individual's endorsement of normative beliefs about what men *should* be and what men *are* like. The norms that encompass these dominant cultural definitions of masculinity and manhood can be understood as hegemonic representations of masculinity. There are several instruments available that proclaim to measure masculinity ideology (for a full review see Smiler, 2004); therefore, for the purpose of this study, five criteria were used to evaluate the appropriateness of any one instrument: 1) Congruent with Social Constructionist Theoretical Framework; 2) Measure Multiple Dimensions of Masculinity; 3) Items are appropriate for use with MSM; 4) Found to have sufficient psychometric properties; 5) Short in Length.

After a thorough review of the available scales, it was decided that a revised version of the "Masculinity, Attitudes, Stress, and Conformity Questionnaire" (MASC) would be used in this study. The MASC was developed in order to measure masculinity

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ideology as well as an individual's own conformity to and distress resulting from male

role expectations (Nabavi, 2004). Measuring these three distinct constructs within one

instrument is an innovative approach that has not been previously explored in the

masculinity literature; however, for the purposes of this research and in accordance with

the criteria previously described, only the items measuring attitudes towards masculinity

were used.

The MASC is reported to measure six dimensions of masculinity ideology

including constructs relating to emotional restrictiveness, independence, achievement,

dominance, aggressiveness, and sexuality. The MASC attitudes scale consists of 36 items

and was found to have excellent internal consistency as measured by Cronbach's alpha (α

= .95) (Nabavi, 2004). Convergent validity was enumerated by examining the magnitude

and direction of the bivariate associations between the MASC and the following scales:

Male Role Norms Inventory (MRNI), Gender Role Conflict Scale (GRCS), Stereotypes

about Male Sexuality Scale (SAMSS), and the Attitudes Toward Women Scale (AWS)

(Nabavi, 2004). The MRNI is a widely used measure of masculinity ideology (Levant et

al.,1992). A positive correlation between the MRNI and MASC attitudes scale is an

indicator of the scale's convergent validity. Nabavi reported a strong positive association

(r = .70) between the two scales (2004). Similarly, the MASC attitudes scale was

positively correlated (r = .54) with the SAMSS, an instrument designed to measure the

degree to which an individual endorses normative cultural ideals of male sexuality. These

findings lend empirical support for the convergent validity of the MASC attitudes scale.

Two items from the MASC were not included because they appeared inappropriate for

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use with a sample of gay, bisexual, and other MSM ("A man should be the head of the family if he has a wife or partner" and "a man should take the lead when it comes to sex").

In addition to the MASC, items from the "Meanings of Masculinity Scale" (MMS) were included. This instrument was developed to measure gay men's conceptions of masculinity based on three separate dimensions: Masculinity as Physical Appearance, as Social Behavior, and as Sex (Halkitis, Green, and Wilton, 2004). Five items taken from the "Masculinity as Physical Appearance" subscale were used in this study. The purpose of these items is to address an often unexplored dimension of masculinity—physical appearance. Three items were not included from the original subscale in order to reduce redundant items and to eliminate esoteric items that are inappropriate for use with non-gay identified MSM (i.e."The guys in Tom of Finland portraits represent the masculine idea"). Internal consistency of the "Physical Appearance" subscale was determined to be good with α=0.81 (Halkitis, Green, and Wilton, 2004).

A final set of five items was included in order to further explore aspects of masculinity as it relates to cultural norms surrounding sexuality. Three items were adapted from the Stereotypes About Male Sexuality Scale (SAMSS), specifically from the "Spontaneous Sex" subscale that seeks to measure the cultural norm that sexual behavior for men is natural and spontaneous (Snell, Belk, and Hawkins, 1986). Two additional items were created that relate to this norm ("Most men don't like to think about the consequences of sex" and "For most men, good sex is about taking risks"). In sum, a total of 44 items were included in the survey instrument to measure multiple

dimensions of masculinity (See Table 1 for a summary of these variables).

Table 1.

Summary of Independent Variables

Variable	Type of Measurement	Values
Masculinity Ideology	Interval	1=Strongly Disagree 6=Strongly Agree
Mediators		
Drug Use before or during sexual activity	Categorical	0=No 1=Yes
Internet Use to meet sex partner(s)	Categorical	0=No 1=Yes
Control Variables		
Age	Ratio	Age in Years
Race/Ethnicity	Categorical	0=White/Caucasian 1=Not White/Caucasian
Education	Categorical	0=Not College Graduate 1=College Graduate
Sexual Identity	Categorical	0=Gay/Other 1=Bisexual
HIV Status	Categorical	0=HIV Negative/Never Tested 1=HIV Positive

DATA ANALYSIS

Data was downloaded from the online survey directly into a spreadsheet format.

The SAS statistical software version 9.1 for Microsoft Windows was used to conduct all

statistical analysis (SAS Institute, Cary, NC).

Preliminary Scale Development

To date, no known published research has empirically confirmed the multidimensionality of the MASC subscales. Furthermore, a composite of three separate scales were used to measure masculinity ideology in the present study. For these reasons, principal axis factor analysis using the varimax rotation method was conducted to confirm the multidimensionality of the scale. As an exploratory step, the number of factors to retain was determined using parallel analysis, which is argued to be a superior method for determining factor retention compared to more commonly used criteria (Velicer, Eaton, Fava, 2000). Parallel analysis involves a comparison of the average eigenvalues generated from random correlation matrices with the eigenvalues from the real data correlation matrix. A factor is retained if the eigenvalue from the real data is greater than the eigenvalue from the randomly generated data (Hayton, Allen & Scarpello, 2004). This analysis failed to confirm the multidimensionality of the masculinity measures used in this study. All but two items significantly loaded (minimal factor loading of .32) on one factor. A composite variable of the 42 items measuring masculinity ideology, excluding the two items that did not significantly load on the factor, was created based on these findings. Reliability analysis using Cronbach's Alpha demonstrated strong internal consistency of this composite measure ($\alpha=0.95$).

Analyses

Frequencies of the demographic data and substance use items were calculated for descriptive analyses. Univariate analysis was conducted on all of the interval and continuous items in order to generate measures of central tendency, distribution,

skewness, and to identity outliers. Bivariate analyses (zero-order correlations) were performed in order to provide a cursory examination of the hypothesized relationships.. Ordinary least squares multiple regression analyses were conducted to ascertain the percentage of unique variance explained by the independent variable (masculinity ideology) over and above that accounted for by the controls (Age, Race/Ethnicity, Education, Sexual Identity, HIV Status). Hierarchical multiple regression models were constructed in two steps. Two models were generated for each of the five dependent variables. Age, race/ethnicity, education, sexual identity and HIV serostatus were entered in step one as a block of control variables. The composite masculinity variable was added in step two. This procedure allowed for the analysis of the change in the percentage of variance explained by the addition of the masculinity variable, independent of that explained by the control variables.

A similar approach using logistical regression models for a dichotomous outcome (any unprotected anal sex in last six months) was used to test the mediation hypothesis. Mediating effects were evaluated based on the following criteria: (1) The independent variable (i.e. Masculinity Ideology) is associated with the mediator variables (i.e. Substance Use and Internet Use); (2) The mediator variables are associated with the dependent variable (i.e. UAI); (3) The independent variable should be associated with the dependent variable; (4) The association between the independent and dependent variable is statistically decreased (evidenced by the semi-partial coefficient) with the inclusion of the mediating variable (Baron and Kenny, 1986).

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CHAPTER 4

RESULTS

DESTRIPTIVE STATISTICS

Sample Characteristics (Control Variables)

Characteristics of the study sample are described in Table 2. The age of the

sample ranged from 18 to 65 years with a mean age of 37.9 (SD=12.3). Respondents

were primarily Caucasian or white (83.1%), college educated (60.2%), gay identified

(80.5%), and HIV-negative (73.8%). Approximately 5% reported a recent STI diagnosis.

Sexual Activity and Barebacking Intentions (Dependent variables)

The majority of the sample reported having anal intercourse at least once within

the previous six months (76.9%), forty-nine percent did so at least once without a

condom. On average, respondents reported 3.56 (SD=9.48) and 3.52 (SD=11.55) partners

with whom they engaged in insertive and/or receptive anal sex, respectively. Nearly 64%

of the sample reported no insertive unprotected anal intercourse (IUAI) and 68% no

receptive unprotected anal intercourse (RUAI) within the previous six months. Measured

on a 5-point scale, the mean for barebacking intentions was 1.76 (SD=.90), indicating

disagreement with the statements; however, the scores ranged between 1 (Strong

Disagree) and 5 (Strongly Agree). Descriptive statistics for the five outcome variables

can be found in Table 3.

Table 2.

Demographic Characteristics of Study Sample

Characteristic	No.	(%)
Age (Mean = 37.9)		
18-20	72	(7.9)
21-30	242	(26.7)
31-40	190	(21.0)
41-50	245	(27.0)
51-60	130	(14.3)
60-65	28	(3.1)
Race/Ethnicity		
White/Caucasian	754	(83.1)
Hispanic/Latino	69	(7.6)
Asian/Pacific Islander	32	(3.5)
Black/African American	23	(2.5)
Mixed Race/Other	29	(3.2)
Education		
High School or less	56	(6.2)
Some College or Tech School	304	(33.6)
Bachelor's Degree	302	(33.3)
Graduate/Professional School	244	(26.9)
Sexual Orientation		
Gay	730	(80.5)
Bisexual	143	(15.8)
Straight/Heterosexual	16	(1.8)
Other Specified	14	(1.5)
HIV Status		
Negative	669	(73.8)
Positive	77	(8.5)
Never Tested	161	(17.8)

Note. Numbers might not sum to total

because of missing data.

Table 3.

Descriptive Statistics for Dependent Variables

	Mean	Standard Deviation	Min	Max	Skewness coefficient	Skewness coefficient after transformation
No. of Sexual Partners						
Anal insertive	3.56	9.48	0	123	6.61	1.15
Anal receptive	3.52	11.55	0	250	12.95	1.22
Frequency of Unprotected Anal Sex[a]						
Anal insertive	1.62	1.03	1	6	1.91	1.1
Anal receptive	1.58	1.03	1	6	2.07	1.25
Intentions for Barebacking[b]	1.76	0.9	1	6	1.07	-

Note. Dashes indicate the variable was not transformed and the original values were used in subsequent analyses.

[a] 1= Zero (not at all), 2= one to two times, 3= three to nine times, 4= ten to nineteen times, 5= twenty to forty-nine times, 6= fifty or more times. [b] 1=Strongly Disagree, 2=Disagree, 3=Neither agree nor disagree/Neutral, 4=Agree, 5= Strongly Agree.

All five of the dependent variables were positively skewed to varying degrees pulling the tails of the distributions to the right. Number of partners in which the respondents reported insertive intercourse contained the most extreme outlier, more than double that of the next highest value (100 partners). There was no indication that these extreme observations were erroneous. Furthermore, highly skewed distributions with similar measures of sexual behavior among samples of MSM are not uncommon in the literature (CDC, 2004; Benotsch, Kalichman, Cage, 2002; Tabet et al., 1998), suggesting

that the distribution for this population is non-normal. Non-parametric analyses are not affected by non-normal distributions and provide an alterative analytic approach; however, these tests are not immune from the influence of outliers (Zimmerman 1995; Zimmerman, 1994). Considering these factors, logarithmic transformations of four of the five dependent variables were calculated (the degree of skew of the barebacking intentions variable was acceptable and did not warrant transformation). Logarithmic transformations are mathematical operations that pull in the tails of a distribution, reducing skewness and improving normality, while retaining the rank order of the values. The degree of skewness of the transformed variables was markedly reduced and smaller than the suggested maximum value of ±2.0 (Tabachnick & Fidell, 2007). Standardized scores (z-scores) were calculated before and after transformation to determine if the highest values on the skewed variables were disconnected from the rest of the scores, indicating extreme outliers. As expected, large standard scores (i.e. 21.3 and 12.60) disconnected from the distribution of standardized scores were found in the untransformed variables; however, after transformation, the standard scores of the highest values decreased and no long appear disconnected from the rest of their distributions (Tabachnick & Fidell, 2007). Proceeding with parametric analysis was determined to be acceptable considering these improvements in the distributions of the variables, combined with a large sample size that safeguards against violations of normality.

Masculinity Ideology (Independent Variable)

The scores on the measure of masculinity ideology (MI) ranged from 1 to 6 with high scores indicating stronger endorsement of hegemonic MI. On average, the sample

appeared to moderately or slightly disagree with the items measuring MI (M = 2.75, SD=.77).

Drug and Internet use (*Mediating Variables)*

Ninety-six respondents skipped the section on drug use. Of those who completed these items (n= 811), approximately 26% reported using drugs (Poppers, Cocaine, Ecstasy, Methamphetamine, GHB and/or Ketamine) before or during sex on at least one occasion within the previous six months. The most commonly reported drug used before or during sex was inhalant nitrates ("Poppers") with nearly 24% of respondents using it at least once. Cocaine was the second most common (5.5%) followed by Ecstasy (5.4), Crystal Meth (5.4%), GHB (3.9), and Ketamine (1.4). A dichotomous variable was created for use with regression analysis. The variable categorized drug use within a sexual context in the previous six months as yes or no.

The majority of respondents (78%) reported ever having had sexual relations with someone they met using the Internet. Within the previous six months, 65% of men reported meeting and having sex with men they met using the Internet. Fifty-two percent of men specified having anal sex with a partner they met using the Internet.

CORRELATIONAL ANALYSIS

Bivariate associations were explored in order to obtain a cursory understanding of the size and direction of the primary relationships. Specifically, masculinity ideology (MI) was correlated with each of the five outcome variables, which included the number of insertive and receptive sexual partners, frequency of insertive and receptive unprotected anal sex (IUAI & RUAI), and barebacking intentions. MI was positively

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associated with the number of insertive and receptive partners within the previous six months (r = .17, p<.0001 and r = .20, p<.0001, respectively). On average, those who endorsed more hegemonic masculine norms had a greater number of sexual partners both insertive and receptive roles. Positive associations were also found between MI and the frequency of unprotected anal intercourse. IUAI was positively associated with MI (r = .16, p<.0001) indicating that those who endorsed hegemonic norms had a greater number of unprotected sexual encounters when they were the insertive partner. Similarly, those who endorsed hegemonic norms also reported greater frequency of RUAI (r = .14, p<.0001). Like the behavioral outcomes, barebacking intentions were also positively associated with masculinity ideology (r = .23, p<.0001). It is not surprising that the five outcomes were also all significantly associated, indicating that those engaging in one risk behavior are more likely to be engaging in other behaviors. Pearson product-moment correlational coefficients for these associations can be found in Table 4.

Results from these preliminary analyses lend support for hypothesis 1, 2 and 3; however, further analysis was needed to see if these associations hold when controlling for age, race/ethnicity, education, sexual identity, and HIV serostatus. The potential intervening influence of the drug and Internet use variables were also explored using logistical multiple regression.

Table 4.

Correlation matrix for masculinity ideology (MI) and dependent variables.

Variable	1	2	3	4	5	6
1. MI	---					
2. No. Insertive partners	.17**	---				
3. Freq. of IUAI	.16**	.64**	---			
4. No. Receptive partners	.20**	.34**	.22**	---		
5. Freq. of RUAI	.14**	.23**	.37**	.65**	---	
6. Barebacking Intentions	.23**	.28**	.46**	.34**	.46**	---

Note. MI = Masculinity Ideology; IUAI = Insertive unprotected anal intercourse;

RUAI=Receptive unprotected anal intercourse.

* $p < .01$. **$p < .0001$

REGRESSION ANALYSIS

Hypothesis 1

It was hypothesized that MI would be independently associated with the number of sexual partners after controlling for relevant individual characteristics. Number of sexual partners was analyzed separately for insertive and receptive anal sex as previous research indicates that these represent two distinct sexual behaviors with distinct predictors. Five control variables were entered as a single block and included age, race, education, sexual identity, and HIV serostatus. The second step involved the addition of the MI variable in order to ascertain its unique contribution to the amount of variance explained by the models. Results from these analyses appear in Table 5.

Table 5.

Regression analysis for the prediction of number of anal sex partners within the

previous six months.

Explanatory Variables	R^2	F	df	β
Insertive Anal Sex (Log)				
Step1	0.03	5.73***	5,894	
Age				-.06
Non-white				-.02
College Graduate				-.10**
Bisexual Identity				.03
HIV Positive				.16***
Step2	0.06	9.37***	6, 893	
Age				-.03
Non-white				-.02
College Graduate				-.08*
Bisexual Identity				.01
HIV Positive				.15***
Masculinity				.17***
Receptive Anal Sex (Log)				
Step1	0.07	14.41***	5, 893	
Age				-.15***
Non-white				.02
College Graduate				-.03
Bisexual Identity				-.03
HIV Positive				.24***
Step2	0.11	18.62***	6, 893	
Age				-.12**
Non-white				.02
College Graduate				-.02
Bisexual Identity				-.06
HIV Positive				.24***
Masculinity				.20***

*p<.05 **p<.001 ***p<.0001

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Number of Insertive Partners

The first step containing the control variables showed that graduating from college and HIV-positive serostatus were independent correlates of the number of insertive partners. The independent contribution of education was considerably less than HIV serostatus evidenced by the smaller standardized regression coefficient (see Table 5) and lower levels of significance and are most likely artifacts of the large sample size. In the second step, MI was independently associated with number of insertive partners (β = .17, p<.0001) after adjusting for the effects of the control variables ($F_{(5, 894)}$ = 9.37, p<.0001). The total model explained 6% of the variance in number of insertive partners with 3% of that accounted for by MI. A comparison of the standardized regression coefficient, or Betas, showed that MI was the most important variable in terms of its individual contribution to the total model. Men who endorsed more normative attitudes about masculinity were more likely to also have a greater number of anal sex partners in which they assumed the insertive role.

Number of Receptive Partners

The first step containing the control variables showed that age and HIV-positive serostatus were independent correlates of the number of receptive partners after adjusting for the other variables in the model (p<.0001). MI was added in the second step. This model was statistically significant ($F_{(6, 893)}$ = 18.62, p<.0001) accounting for 11% of the total variance. MI was independently associated with the number of receptive partners (β = .21, p<.0001) and accounted for 4% of the explained variance. These results indicate that men with more normative attitudes towards masculinity were more likely to

have had a greater number of anal sex partners in which they assumed the receptive role.

Hypothesis 2

It was hypothesized that MI would be positively associated with the frequency of unprotected anal intercourse within the previous six months. Insertive (IUAI) and receptive (RUAI) unprotected anal intercourse were analyzed separately. The control variables were entered in the first step followed by the addition of the MI variable. Results from these analyses appear in Table 6.

IUAI

The control variables that were statistically significant predictors of IUAI included age and HIV-positive serostatus. Age was marginally significant ($p<.05$) and is most likely an artifact of the large sample size. Age did not remain statistically significant in the second step, confirming this assumption (See Table 6 for Betas and significance levels). The addition of MI to this model increased the R^2 value to .05 and was statistically significant, $F_{(6, 894)} = 8.05$, $p<.0001$. A comparison of the Betas indicate that MI was the strongest predictor ($\beta = .16$, $p<.0001$) in the model and independently contributed 2% of the explained variance. The data indicate that men who endorsed more traditional attitudes about masculinity were more likely to frequently engage in insertive anal sex without a condom.

Table 6.

Regression analysis for the prediction of the frequency of unprotected anal intercourse

within the previous six months.

Explanatory Variables	R^2	F	df	β
IUAI (Log)				
Step1	0.03	5.13***	5, 895	
Age				-.07*
Non-white				-.05
College Graduate				.01
Bisexual Identity				.02
HIV Positive				.16***
Step2	0.05	8.05***	6, 894	
Age				-.05
Non-white				-.05
College Graduate				.01
Bisexual Identity				-.01
HIV Positive				.15***
Masculinity				.16***
RUAI (Log)				
Step1	0.07	14.41***	5, 893	
Age				-.12**
Non-white				-.02
College Graduate				.02
Bisexual Identity				.05
HIV Positive				.26***
Step2	0.09	14.90***	6, 892	
Age				-.10
Non-white				-.02
College Graduate				.03
Bisexual Identity				.03
HIV Positive				.26***
Masculinity				.13***

*p<.05 **p<.001 ***p<.0001

RUAI

Similar to IUAI, age and HIV-positive serostatus were among the two significant control variables related to RUAI. HIV serostatus was the strongest contributor (β = .26, p<.0001) to the prediction of RUAI. The addition of MI to this model increased the R^2 value to .09 and was statistically significant, $F (6, 892)$ = 14.90, p<.0001. A comparison of the Betas indicate that MI was the second strongest predictor (β = .13, p<.0001) in the model and independently contributed 2% of the explained variance. Men who endorsed more traditional attitudes about masculinity were more likely to frequently engage in receptive unprotected anal sex.

Hypothesis 3

In contrast to the behavioral outcomes previously tested, the barebacking intentions outcome purported to measure the degree to which men intentionally seek out unprotected anal intercourse. It was hypothesized that MI would be positively associated with greater intentions to bareback as indicated by higher scores on the barebacking measure. Of the control variables, education, bisexual identity, and HIV-positive serostatus were among the significant predictors associated with barebacking intentions. Unlike the behavioral outcomes, those who graduated college were more likely to seek out barebacking sexual encounters compared to men who did not complete college (β = .13, p<.0001). Also, unlike the behavioral outcomes, bisexual identity was statistically associated with barebacking intentions (β = .06, p<.05); however, the small size of the Beta and the higher alpha level warrant caution in interpreting this finding due to the large sample size and number of hypothesis tests. By far, the greatest contributor to the

model was HIV-positive serostatus (β = .30, p<.0001) indicating the HIV-positive men were more likely to seek out unprotected sexual encounters. The addition of MI to the model increased the R^2 value to .17 and was statistically significant, F (6, 895) = 30.1, p<.0001). MI explained 5% of the total explained variance in the model. Men who endorsed more traditional attitudes toward masculinity were more likely report intentions for barebacking. See Table 7 for a complete listing of Betas and significance levels.

Hypothesis 4

In order to explore causal pathways that may help to explain the relationship between MI and high-risk sexual behavior, two behavioral variables were tested as potential mediators. Based on theoretical analysis and previous research, it was hypothesized that the use of the Internet to meet sex partners and the use of drugs within sexual contexts may be proximate causes that mediate the associations between MI and risky sexual behaviors. A series of logistic regression models were constructed in order to test the mediation hypotheses. These hypotheses were tested using the procedures described by Baron and Kenny (1986) and summarized in the data analysis section in Chapter 3. For this analysis, risky sexual behavior is operationalized as insertive or receptive anal intercourse without the use of a condom. In the first step, meeting sexual partners via the Internet was regressed on the set of control variables and the masculinity variable. This step was repeated with using the drug use variable as the outcome. MI was not associated with using the Internet to meet sexual partners (OR = 1.08, 95% CI: 0.90, 1.3) or the use of drugs before or during sex (OR = 1.19, 95% CI: 0.96, 1.5); therefore, the first criteria for mediation—that the independent and mediator variables are

correlated—was not satisfied. No further mediation analyses were conducted. There was no support for hypothesis 4.

The addition of the drug and Internet use variables, however, increased the amount of variance explained in each outcome measure. The percentage increase ranged from two to twelve percent, with the largest increase in explained variance in the number of receptive partners and the smallest for barebacking intentions. These results highlight the importance of these two variables in explaining the variation in sexual risk behaviors, above and beyond the explanatory power of masculinity ideology and the block of control variables. See Table 8 for the results of these analyses.

Table 7.

Regression analysis for the prediction of barebacking intentions.

Explanatory Variables	R^2	F	df	β
Step1	0.12	23.38***	5, 896	
Age				-.01
Non-white				-.06
College Graduate				.12***
Bisexual Identity				.10*
HIV Positive				.31***
Step2	0.17	30.01***	6, 895	
Age				.03
Non-white				-.06
College Graduate				.13***
Bisexual Identity				.06*
HIV Positive				.30***
Masculinity				.23***

*p<.05 **p<.001 ***p<.0001

Table 8.

Regression analysis with drug and internet use variables.

Explanatory Variables	$R^2 (\Delta R^2)$	F	df	β
No. Insertive Partners (Log)	.14 ('.08)	16.71***	8, 795	
Control Variables + MASC				
Drug Use				.17***
Internet Use				.21***
No. Receptive Partners (Log)	.23 ('.12)	29.38***	8, 795	
Control Variables + MASC				
Drug Use				.27***
Internet Use				.19***
IUAI (Log)	.08 ('.03)	8.71***	8, 795	
Control Variables + MASC				
Drug Use				.15***
Internet Use				.06
RUAI (Log)	.14 ('.05)	17.18***	8, 795	
Control Variables + MASC				
Drug Use				.15***
Internet Use				.16***
Barebacking Intentions (Log)	.19 ('.02)	23.73***	8, 795	
Control Variables + MASC				
Drug Use				.13***
Internet Use				.00

Note. Values enclosed in parentheses represent the change in R^2 after internet and

drug use variables were entered into the model. MASC=Masculinity Ideology

Measure; IUAI = Insertive unprotected anal intercourse; RUAI=Receptive

unprotected anal intercourse.

*p<.05 **p<.001 ***p<.0001

CHAPTER 5

DISCUSSION

A growing body of research points to increasing incidence of HIV and other

sexually transmitted infections among MSM. High-risk sexual behaviors are responsible

for the vast majority of these new infections, charging health researchers with the task of

better understanding the determinants of these behaviors. Fundamental to this

understanding is the acknowledgment that sexual behaviors are not the result of simple

processes along a linear chain of causes, but rather complex, socially embedded practices

involving individual, intrapersonal, and institutional forces. This research sought to

explore the impact of gender as a social institution, which structures sexual practices by

communicating norms and expectations for how men "should" behave, think, and feel. In

line with a social constructionist framework, it was theorized that men who endorsed

hegemonic or normative masculinity to a greater degree would be more likely to exhibit

risk behavior patterns consistent with those norms. In this study, sexual risk-taking was

defined as the number of anal sex partners (both insertive and receptive), the frequency of

unprotected anal intercourse (both insertive and receptive), and the intentions to seek out

bareback sexual encounters. It was hypothesized that masculinity ideology—a

measurement of the degree to which an individual endorses normative aspects of

masculinity—would be positively associated with sexual behavior. Additionally, it was

hypothesized that masculinity ideology would independently explain a percentage of the

variance in these behaviors, above that accounted for by a set of control variables

commonly found to be associated with sexual behavior. This study provides empirical

support for these hypotheses.

Masculinity ideology (MI) was positively associated with the number of anal sex partners, the frequency of unprotected anal sex, and the intentions to seek out and have bareback or unprotected sex. As hypothesized, on average men who endorsed normative masculinity to a greater degree were also more likely to have more sexual partners, have unprotected sex more frequently, and were more likely to intentionally seek out unprotected sex. The degree of variance explained for each outcome variable was small, ranging from 2% to 5%; however, these results suggest that MI does play a role in the social and behavioral determinants of high-risk sexual behaviors among MSM. For insertive sex, MI was the strongest predictor for number of partners and frequency of unprotected sex—surpassing the explanatory power of HIV serostatus. The strongest predictor of receptive sexual behaviors was HIV-positive serostatus, followed by MI. Insertive anal sex is widely acknowledged to be more conducive to transmitting HIV. In an effort to reduce the risk of transmission, HIV-positive men will position themselves as the receptive partner—commonly referred to as strategic positioning. The relatively strong association between HIV serostatus and receptive sexual behaviors lends further evidence for the prevalence of this harm reduction strategy.

Similar to the observed associations among the sexual behavioral variables, MI was positively associated with barebacking intentions. In other words, men who endorsed normative standards of masculinity were also more likely—on average—to report greater intentions for unprotected anal intercourse (barebacking). Recent research has suggested that barebacking has evolved into a social identity ("Barebackers") formed in opposition

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to characteristics and behaviors widely associated with the gay community (Grov et al., 2007; Parsons and Bimbi, 2006). The observed association between MI and barebacking intentions is given greater meaning when understood within this context of transgressive identity construction. Conceptualizing barebacking as an identity formed in opposition to the ubiquitous representations of gay men as effeminate is consistent with a constructionist theory of gender and masculinity. Men who violate social proscriptions against homosexual behavior lack access to "legitimate" interpersonal and societal practices—most notably, heterosexual relations—that provide meaning and context for men to construct masculinity. This type of marginalization, Connell theorizes, can result in the construction of a "protest masculinity," exaggerating hegemonic norms such as sexual prowess and risk-taking (2005). This reasoning underscores the theoretical thinking behind this study and is supported by the empirical observations summarized above.

Furthermore, these findings are consistent with the limited number of studies that have reported comparable relationships between masculinity and sexual behaviors (Shearer, 2005; Jarama, Kennamer, Poppen, Hendricks, & Bradford, 2005; Halkitis, Green, and Wilton, 2004; Pleck & O'Donnell, 2001, Pleck, Sonenstein & Ku, 1993), as well as those that have found indirect relationships with factors such as attitudes towards condoms, condom use, and partner communication mediating the relationship (Shearer, 2005; Noar & Morokoff, 2002). Collectively, this body of research provides sufficient argument for the serious consideration of gender ideologies, specifically those relating to masculinity and manhood, in the evaluation of sexual risk behaviors. At the very least,

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these works can be cited as empirical testimony for future research seeking to elucidate these relationships. This type of research should seek to discern cognitive, emotional, and/or behavioral factors that mediate the relationship between gender ideologies and high-risk sexual behaviors. Attitudes toward condom use, communications regarding safer sex, as well as issues surrounding internalized homophobia are germane psychosocial factors that should be investigated further. Future research should also explore interaction effects of masculinity across social groups including race/ethnicity, social class, sexual identity and HIV status. While these research endeavors would expand upon current knowledge and strengthen explanatory models, quantitative analyses are ill equipped to fully capture the complexity of gender as a multidimensional, dynamic construct. In-depth qualitative research designs may be most suitable at uncovering the process by which masculinity is defined and constructed within the context of sexual practices. Data from these types of studies could prove invaluable to translating this information into effective public health responses.

The results of the current study should be considered hypothesis generating in the sense that they do not yield immediate points for intervention. The primary implication for public health research and practice is to move beyond a categorical treatment of gender. Sex—as in the distinction between biological males and females—is frequently described as a distal, unchangeable risk factor. However, gender—as a socially constructed factor—is dynamic and potentially amenable to change. The current findings suggest that cultural standards of masculinity may work against conventional safe sex messages and sexual health education. Translating the findings of this and similar studies

into practical public health responses could be accomplished by directly challenging endorsement of harmful gender ideologies or targeting social and cultural antecedents that continue to legitimize such ideologies. One example of a "gender transgressive" intervention includes a classroom-based prevention program for adolescents designed around traditional educational materials, but also addresses critical thinking skills pertaining to gender ideologies and sexual scripts (Laub, Somera, Gowen & Diaz, 1999). This type of approach could be easily tailored for gay youth within the context of gay/straight alliances or pride organizations found in many high schools and colleges. Another gender transgressive program titled "Stepping Stones" is an adult workshop developed in Africa that focuses on gender, sexual health, HIV/AIDS, gender violence, communication and relationship skills. The program deals directly with implicit gender ideologies and interpersonal dynamics as a part of a comprehensive workshop. These two programs serve as promising examples of the ways in which issues of femininity and masculinity can be incorporated within comprehensive educational programs.

Theoretical and empirical information presented in this study also points to the exclusion of sexual minorities from social institutions (e.g. marriage) as possible targets for policy-level interventions. Opening access to such institutions may decrease sexual risk-taking by providing sanctioned means of constructing masculinity within contexts that constrain certain risky sexual practices. The recent legal sanctioning of marriage and civil unions for same-sex couples in certain states provides a unique opportunity for researchers to study the impact of such changes to the sexual behavior of subpopulations of MSM.

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Findings from this study should be evaluated against the limitations in the design and methodology. A cross-sectional survey was used to collect the data precluding any causative claims. The models were tested as if MI was the cause of high-risk sexual behaviors, but it is equally possible that MI is a result of certain sexual practices, or perhaps they are both outcomes and causes of each other. It is impossible to determine these temporal relationships given the study design. Courtenay conducted a longitudinal study in which he reported on the temporal relationships between a measure of MI and an aggregate measure of health risk behaviors (1998). He found that beliefs about manhood emerged as the strongest predictor of risk-taking behavioral style after a three year follow-up. Interestingly, he also found that beliefs about manhood changed over these three years and were in turn influenced by behavioral changes in risk behavior, suggesting an interactive relationship.

Other limitations of this study involve the measurement of the variables. Sexual behaviors were assessed over the previous six months and may be subject to recall bias. In addition, this analysis was restricted to single men at the time of participation. Relationship status over the previous six months in which sexual behaviors were assessed was not taken into consideration; therefore, some occurrences of unprotected sexual encounters may have occurred within the context of a monogamous relationship. Similarly, the HIV status of partners was not considered, prohibiting the analysis of harm reduction techniques, such as serosorting.

Concerns regarding the measure of masculinity ideology are also worth mentioning. Despite the high degree of internal consistency for the masculinity scale, the

construct validity for the subscales was not confirmed. This held true even when the additional items were removed, and the analysis was conducted only on the original MASC attitude items. Furthermore, there has been disagreement over the number of dimensions scales of this nature are actually measuring (Luyt, 2005). Parallel analysis was used in this study to determine the number of latent factors. This method is believed to decrease bias in the estimates and produce more valid findings compared to those produced by other more commonly used methods. Perhaps this technique is what differentiates this study from others who have empirically confirmed multiple dimensions of masculinity. Due to the ambiguity in the literature as well as a lack of empirical support, analyses were not conducted using the subscales individually. Future research should address the psychometric properties of the MASC scale as well as other, more widely used scales purporting to measure multiple dimensions of masculinity ideology.

In addition, the four behavioral outcome variables were highly skewed. It is possible that the distribution of sexual behaviors for this population of men is non-normal and highly variable. Rather than truncate the data or use non-parametric tests, which are still affected by extreme outliers, the distributions were corrected using logarithmic transformations. These transformations resulted in vastly improved distributions, though still positively skewed. Furthermore, eliminating the most extreme outliers (those with z-scores in excess of 3.29) only produced trivial changes in the regression estimates.

Finally, the sample was highly educated, mostly gay identified and white/Caucasian preventing generalizations to a diverse population of MSM. The majority of the sample was also recruited from weblogs and online networking sites and

therefore may be more representative of established Internet users. Despite these limitations, this study makes a unique contribution to the literature on the association of gender norms and sexual behaviors. This is the first study to explore these associations with a sample of gay, bisexual, and other MSM adding further credibility to previous findings, which were limited by samples consisting mostly of heterosexual adolescents and college students. It also calls attention to the importance of the Internet in the sexual lives of many MSM. This is important for future research as well as an area for program development.

Conclusion

This research utilized theoretical and empirical work from a variety of social science disciplines as well as critical studies including feminism. It was theoretically driven and informed by these works in all phases of the research process: beginning with the initial evaluation of a current public health issue, followed by the genesis of the study hypotheses, design, and methodology, and finally to the interpretation of findings. Theoretically-based research is a vital component of public health that is often overlooked, evidenced by the volumes of research some have referred to a "risk factorology" (McKinlay & Marceau, 2000). Understanding human sexual behavior—the ultimate driving force behind the HIV/AIDS epidemic—requires pubic health researchers to move beyond conventional predictors of risk. We know that men in the United States, particularly MSM, are disproportionately at risk for HIV infection. In this sense, male gender is a risk factor for HIV infection. Ultimately, this observation is meaningless unless it is understood within a theoretical context that explains what gender actually is

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and what it is about the male gender—or more specifically, masculinity—that is fundamental to the observed disparities in HIV infections. Common sense tells us that MSM are more likely to become infected with HIV/AIDS because of their risky sexual practices (i.e. anal sex), multiple sex partners, and the failure to use condoms. But what is it about male *gender* that predisposes men to these types of behaviors and why do some men engage in them to a greater degree than others? These questions were fundamental to this investigation. The answers provided here—informed by the empirical data—point in part to the social and cultural norms of manhood and masculinity, and the degree to which individuals endorse these norms.

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Footnotes

[1] This study focused on men who have sex with men (MSM) in order to be inclusive of all men who share the risks associated with certain sexual practices but who may not identify as gay or bisexual.

[2] The term "club drugs" is a dynamic category that includes recreational drugs which are associated with dance clubs, parties and raves.