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Midwest men's sex survey: the impact of norms, attitudes, and control factors on intentions and action planning to use condoms

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MIDWEST MEN'S SEX SURVEY: THE IMPACT OF NORMS, ATTITUDES, AND CONTROL FACTORS ON INTENTIONS AND ACTION PLANNING TO USE CONDOMS

by

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CERTIFICATE OF APPROVAL

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MASTER'S THESIS

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To my family, whose support, encouragement, and acceptance help me to persevere
And in loving memory of Laura Ann Gross and Luka Louise Kell

It began to seem that one would have to hold in the mind forever two sides which seemed to be in opposition. The first idea was acceptance, the acceptance, totally and without rancor, of life as it is, and men as they are: in the light of this idea, it goes without saying that injustice is commonplace. But this did not mean that one could be complacent, for the second idea was of equal power: that one must never, in one's own life, accept these injustices as commonplace but must fight them with all one's strength.

James Baldwin
Notes of a Native Son

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ABSTRACT

This study assessed the relationship of variables from the Theory of Planned Behavior (TPB) with intentions to use condoms at next sex and action planning for condom use for main partners and for casual partners among an online of men who have sex with men (MSM) in a Midwestern state. The purpose of this study was to investigate variables of TPB among an online sample of HIV negative, Midwestern MSM and assess significant predictors of intentions separately by casual partners and main partners. Next, action planning was assessed as a potential variable to address the intention-behavior gap.

The sample was recruited through an online social networking site, a lesbian, gay, bisexual, transgender (LGBT) – themed statewide newspaper and website. Participants completed an online survey that took 15-20 minutes to complete. Items assessed variables related to the TPB as well as action planning, stages of change, alternative strategies to reduce risk of HIV, and demographic variables including age, urban or rural residence, and HIV status.

The results revealed that all TPB variables were strongly, significantly related for both casual and for main partners. The final regression models to predict intentions to use condoms at next sex accounted for 62% of the variance for main partners and 68% for casual partners. The regression models to predict action planning differed by partner type. For main partners, perceived behavioral control and intentions were significant predictors and explained 40% of the variance in action planning. For casual partners, self-efficacy was the significant predictor in the final model and explained 72% of the variance.

Potential reasons for the differences in models by partner type for action planning are offered. Action planning is suggested as a potential mediating variable between intention and behavior that requires further research. Implications for HIV prevention

interventions with MSM are discussed in light of reduced funding for low incidence states.

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INTRODUCTION

HIV Risk among MSM in Iowa

HIV infections among men who have sex with men continue to rise in Iowa. Men who have sex with men, or MSM, "refers to all men who have sex with other men, regardless of how they identify themselves (gay, bisexual or heterosexual)" (CDC, 2010). According to the Iowa Department of Public Health (IDPH), the number of newly diagnosed HIV infections went from 40 in 2005 to a record-breaking high of 70 MSM in the state testing positive for HIV in 2007. In the past four years, the number of diagnoses of MSM has remained close to the higher level of diagnoses, with an average of 66 per year (IDPH, 2012).

The statistics from Iowa mirror what is happening with HIV infection rates among MSM nationally. Rates of infection among MSM in the United States have steadily increased since the early 1990s, with an overall increase of 32% from 1993 to 2006 (Hall et al., 2008). This continued rise has persisted even through the era of highly active anti-retroviral therapy (HAART), which is a strong retroviral drug that reduces viral loads to undetectable levels in some cases and decreases the possibility of HIV transmission from HIV positive to HIV negative persons.

The growing number of new HIV infections among MSM stands in stark contrast to the total rates of infection in the U.S. across all groups (e.g., males, females, racial groups, intravenous drug users). The total incidence rate of HIV infection has leveled off since the high in the mid-1980s when HIV testing began. The overall rate of new infections rose slightly in the mid-1990s, perhaps due to increased testing, but has reached a plateau through the new millennium. Importantly, MSM are the only HIV risk

group that continues to experience rising HIV infection rates since 2000 (Hall et al., 2008).

Clearly, MSM are disproportionately represented in the number of HIV exposures. Though no state-specific statistics are available, national statistics allow a comparison of the proportion of MSM in the population to the proportion of HIV infection rates to illustrate the disparity. The percentage of men who report male-to-male sexual contact is 5% to 7% in the United States (CDC, 2008). Importantly, the proportional estimates differ based on the statistical models used and whether the question is asked within a recent time frame of three to five years or sexual contact since age 18. The latest estimates suggest that the proportion is closer to 2% of the U.S. population (Purcell et al., 2010). Given Iowa's population estimates of just above 3 million as of 2009, the conservative proportion estimated by Purcell et al. would signify that approximately 60,150 persons are MSM (Census Bureau, 2008). Though the proportional amount is a relatively small minority, MSM account for the majority of infections in Iowa. In fact, MSM represents 56% of all HIV infections (IDPH, 2012). These percentages are similar to those reported nationally. In the most recent investigation of 21 U.S. cities, CDC (2010) reported that approximately one in five (19%) of MSM were HIV positive. According to 2007 data, MSM were 44 times more likely than other men to receive an HIV diagnosis and 40 times more likely than women (Purcell et al., 2010).

Notably, MSM are not the only group disproportionately affected by the epidemic; disparities exist among Blacks, Latinos, and persons living in poverty as well. Nationally, HIV incidence rates among Black males are six times higher than White males and among Black females are 15 higher than White females; rates of HIV among Latino males are two and a half times higher than White males and among Latino females are four and a half times higher than White females (Prejean et al., 2011). Based on the 2011 state epidemiological data for Iowa, Blacks were 9 times more likely to be

diagnosed with HIV than Whites and Latinos were 3.3 times more likely to be diagnosed than Whites (IDPH, 2012). Among heterosexuals, rates of HIV infection in U.S. high poverty areas (defined as those with over 20% of residents below the poverty line) are 10-20 times higher than the national average HIV incidence rate for heterosexuals (which includes all socioeconomic strata) (Denning & De Nenno, 2010).

Even among MSM, subgroups of men are disproportionately impacted by the epidemic. The rising rates of infection among young MSM in Iowa are particularly alarming. The number of diagnoses among young MSM, ages 15 to 24, more than tripled with five diagnoses in 2007 and 16 diagnoses in 2009. For 2011, 18 MSM ages 15-24 were diagnosed (IDPH, 2012). Nationally, the rise in infections is predominately among young black MSM (Prejean et al., 2011). In Iowa, 6 of the 18 new diagnoses among young MSM in 2011 were among Blacks (IDPH, 2012).

One of the main factors driving the epidemic, according to the CDC, is that a large proportion of young MSM do not know they are infected with HIV and may unintentionally affect their sexual partners. In the most recent CDC (2010) study of 21 U.S. cities, among MSM under 30 years of age, 40% of Whites, 71% of Blacks, 63% of Hispanics did not know they were HIV positive. In addition, a recent qualitative study with young MSM pointed to the lack of relevant sexual education regarding male-to-male sexual contact from formal sources such as public schools. In order to obtain information, individuals may seek out informal sources—such as older sexual partners, pornography or the Internet—which may provide inconsistent or inaccurate information (Kubicek, Beyer, Weiss, Iverson & Kipke, 2010).

Among younger MSM and MSM as a group, the Internet has had an impact on the increase in HIV infections vis-à-vis the number of men seeking sex online and engagement in risky sexual behavior (Bull & McFarlane, 2000). According to a meta-analysis of sex studies with MSM from 2000 to 2005, an estimated 42-75% of MSM go online to find sex (Liau, Millett & Marks, 2006). Research suggests that Internet-using

MSM were more likely to engage in high risk behaviors, such as reporting sex with multiple partners, using methamphetamine and reporting higher rates of unprotected sex (Benotsch, Kalichman & Cage, 2002). In an Internet-based study that compared MSM to non-MSM, MSM were much more likely to report meeting partners via the Internet and engaging in sexual intercourse with their partners than non-MSM (Bull, McFarlane & Rietmeijer, 2001). To qualify these findings, a study of young MSM found that the men who used the Internet to meet sexual partners had similar rates of unprotected sex compared to the men who met sexual partners offline. However, the men who used the Internet to meet sexual partners reported significantly higher numbers of sexual partners (Horvath, Remafedi & Rosser, 2008).

Overall, the growth of the Internet as a means to seek out information and interact with others ensures that Internet must be considered in HIV-related research and prevention. Importantly, the use of the Internet to seek out sexual partners and sexual health information is more prevalent among MSM and Internet use has grown more rapidly when compared with the general population. Whereas the gay community (where most MSM are visible) has ostensibly decreased in the past decade as evidenced by observations of community members—such as declining number of gay bars, dissipation of predominantly gay neighborhoods—the virtual gay community has increased drastically. Key informants from various cities identified the virtual gay community as larger than the community offline (Rosser, West & Weinmeyer, 2008). In fact, gay virtual communities have expanded to approximately 2.5 -6.2 million MSM that are connected online, according to an estimate in 2006 (Liau et al.). However, the online population of MSM may be much larger. In Dr. Simon Rosser's personal communication with Gay.com, a popular dating and sex site, 22.39 million unique persons in the U.S. had visited the site in the last 12 months. Manhunt.net, the fastest growing site for men interested in men, reports an active member population of 1.7 million. The largest social

networking site, Facebook, has almost 650,000 U.S. profiles for men interested in men, and 4,880 within Iowa.

In addition, the use of the Internet also has been reported to be more common in rural areas as a means of connecting to other MSM and reducing isolation (Williams, Bowen, & Horvath, 2005). Though the overall incidence of new infections continues to come from urban areas, according to the CDC an increasing number of new HIV diagnoses are coming from rural areas (CDC, 2005). HIV risk behaviors have been found to occur more frequently among rural MSM when meeting sexual partners via the Internet, including less condom use and more sexual partners (Horvath, Bowen & Williams, 2006). Additionally, Kakietek, Sullivan, and Heffelfinger (2011) investigated a sample of MSM in 12 cities that included Des Moines, Iowa and Iowa City, Iowa who completed surveys at gay pride events to compare rates of reported unprotected anal sex (both receptive and insertive) with online and offline partners for MSM in rural and urban areas. The authors found that rural MSM were twice as likely to report unprotected anal sex with their online partners compared to urban MSM. Specifically, the rural MSM had significantly higher odds of reporting unprotected anal sex in general and unprotected insertive anal sex. However, rates of unprotected receptive anal sex did not differ by rural or urban residence. The authors suggest that MSM, including rural MSM, may be aware of the increased risk of HIV through receptive anal sex and reduce their risk by avoiding this sexual position in sexual encounters with partners met online.

The demographics of Iowa make MSM residents of the state highly relevant to the investigation of differences in HIV risk by rural compared to urban residence. Iowa has a mix of both urban and rural areas, with approximately 58% of residents living in metropolitan areas and 42% of the population residing in non-metropolitan (Census Bureau, 2008). The Census Bureau defines a metropolitan area as greater than 50,000 people and encompassing one or more counties, depending on the socioeconomic dependence such as commuting from adjacent counties (2008). Approximately 48% of

Iowa's population lives in 10 out of 99 counties in the state and 75% of new HIV diagnoses through 2005 were coming from the ten most populous counties.

Despite the lower percentage of HIV infections in rural areas, MSM in non-metropolitan areas may face unique challenges due to the geographic location when accessing health and social services in terms of availability of programs and proximity of service locations. Additionally, social challenges such as more intense stigma of MSM and HIV/AIDS may provide additional barriers to receiving appropriate information and services. The greater prevalence and strength of stigma and internalized homophobia may result in engagement in risky behaviors that place rural MSM at increased risk of HIV infection (Horvath et al., 2006; Herek, Capitanio & Widaman, 2003).

Other Factors Related to HIV Risk among MSM

From the individual level to the societal level, complex factors influence the increased risk of exposure to HIV that MSM experience. At the individual level, a large proportion of MSM may be unaware of their HIV status. According to the CDC (2010), approximately 44% of MSM infected with HIV do not know their status in a study of 21 U.S. cities. These MSM may be unknowingly infecting their sexual partners. Notably, the proportion may vary at the community level. Preliminary data suggests that rates may be higher in certain communities of MSM such as young MSM and those of color.

Secondly, the type of sexual activity affects the level of risk. Although the per-act exposure to an HIV-positive partner is relatively low, differences are noted by type of sexual activity. The risk of acquisition of HIV through receptive anal sex is higher than through other types of sexual activity, including receptive penile-vaginal intercourse and insertive anal intercourse. In fact, unprotected receptive anal sex is the third highest risk of acquisition of HIV (CDC, 2005).

In addition, the disproportionate impact of HIV on the MSM community may produce a cyclical effect. As statistics of the high rates of HIV infection among MSM in Iowa and the U.S. indicate, a significant number of MSM are living with HIV/AIDS.

The high prevalence of MSM living with HIV/AIDS increases the chances that sexual encounters among MSM may involve a positive and negative partner. Therefore, an increased probability exists of exposure of the negative partner to HIV during a sexual encounter, especially in instances involving a positive partner who does not know that he is HIV positive.

Current trends in safer sex and challenges to prevention may relate to HIV infection rates among MSM. Since the beginning of the epidemic, MSM have had to make significant adjustments in sexual practices in response to HIV/AIDS. The main prevention message throughout the epidemic has been to use condoms for sex. The majority of MSM use condoms, but a sizeable minority does not use condoms in some or all circumstances. Interestingly, condom use is more common with casual partners than with main partners. Sullivan, Salazar, Buchbinder and Sanchez (2009) reviewed epidemiological data for MSM over the past 15 years separated out by casual and main partners and found that approximately 68% of HIV transmissions were from main partners due to a higher number of anal sex acts, greater likelihood of being the receptive partner and less use of condoms during sex.

Rowniak (2009) reviewed recent literature that cited the increase in safe sex fatigue in the community, treatment optimism for HIV and the use of serosorting as significant developments that may impact the continued rise in HIV infections among MSM. Safe sex fatigue involves an increasing perception of the difficulty of engaging in safe sex. Treatment optimism refers to an increase in the perception that HIV is a manageable illness with more effective drug treatments and that HIV is no longer seen as a death sentence. Lastly, use of serosorting, or only engaging in sex with sex partners of the same serostatus, may be increasing among MSM as an alternative to condom use (Hopkins & Rietmeijer, 2007). The efficacy of serosorting is inconclusive due to some studies suggesting that the technique may be related to higher HIV infection rates (Rowniak, 2009). Though the data are preliminary, trends in the community's norms for

condom use and HIV prevention may provide further explanations as to why HIV infections are rising among MSM.

At the societal level, stigma and negative attitudes towards MSM such as homophobia and fear of HIV are still common and place MSM at greater risk for HIV infection (Herek et al., 2003). Stigma about HIV and homophobia may reduce access to healthcare and sexual health resources and relate to engagement in higher risk sexual behaviors (CDC, 2010). Stigma related to HIV and homophobia can impact an individual's ability or willingness to test for HIV, disclose his status, seek medical treatment, find employment, secure housing and develop or maintain a support system. Alarmingly, four of every five MSM report that no intensive interventions aimed at reducing HIV risk have reached them in the last year. Additionally, one of every four HIV positive persons' medical providers has not conversed with him or her about ways to reduce risk of HIV transmission (Wolitski, 2010).

Psychosocial factors may be impacted by stigma. Mental health related variables like depression and anxiety as well as substance abuse have been found to be more prevalent among gay, bisexual and other men who have sex with men. A large study of California residents found prevalence rates of five major psychiatric disorders, including major depression, generalized anxiety disorder, panic attacks, alcohol dependence and drug dependence were significantly higher among sexual minorities (including gay, bisexual and other men who have sex with men) compared to heterosexuals. The rate of mental health disorders and substance abuse appears to be highest among men who are HIV positive. The authors suggest the importance of measuring sexual orientation in health studies because broadly defined sexual minority status appears to impact psychiatric morbidity similar to gender or age (Cochran & Mays, 2009).

The internalization of negative attitudes about one's minority sexual orientation, or homonegativity, may be more impactful than sexual orientation alone. Among a large, Midwestern sample of MSM, homonegativity, and not sexual orientation, was

significantly related to higher levels of depression and dysthymia. Homonegativity also was negatively related to comfort with one's sexuality and degree of "outness" or socialization and visibility with other MSM in the community (Rosser, Bockting, Ross, Miner & Coleman, 2008).

Stigma from the larger society may impact homonegativity. In an investigation of General Social Survey data since the 1970s, Glick and Golden (2010) compared trends in stigma among blacks and whites to attitudes about homosexuality among black and white MSM. The rate of blacks that believe that homosexuality is "always wrong" has remained unchanged since the 1970s, but has decreased by approximately 20% among whites. Comparatively, among MSM, the percentage of black MSM who believe homosexuality is "always wrong" is significantly higher (approximately 30% more) than that of whites. Furthermore, black MSM with negative attitudes are significantly less likely to have been tested for HIV than black MSM with more positive attitudes about homosexuality. Glick and Golden suggest that these findings present a potential pathway by which societal stigma impacts MSM and consequently affects rates of HIV infection.

To further illustrate the impact of stigma, other studies have investigated how psychosocial factors may play a direct role with HIV risk behavior or mediate the relationship between negative experiences (e.g., homonegativity) and HIV risk behavior. Among a large, urban probability sample from four U.S. cities, Relf, Huang, Campbell and Catania (2004) examined childhood sexual abuse, gay identity, adverse early life experiences, battering (physical violence, sexual violence, psychological/symbolic abuse) and substance use in relationship to HIV risk behaviors. A model that included all of these variables was found to significantly predict HIV risk behaviors, accounting for 17.5-20.3% of the variance in HIV risk behaviors. The results suggest that abuse, violence and other negative life experiences are factors that elevate risk of HIV acquisition.

The same sample and data set as Relf et al. (2004) was used by Stall et al. (2003) in a separate analysis of the relationship of four variables, childhood sexual abuse, depression, battering and polydrug use, to sexual risk taking. Importantly, the authors expected to find an interrelationship among the variables to support their theory of an additive health effect. The results showed that the four variables were significantly related to sexual risk taking and that all variables were interrelated.

The confluence of risk factors has led to a theory regarding the increased HIV risk of MSM. Stall and colleagues (2003) argue that the interrelationship and additive nature of the health problems suggests that a syndemic is taking place among MSM. The *syndemic* refers to the confluence of several related health problems (e.g. mental health, substance use, and trauma) that exist within the MSM community and collectively increase the vulnerability to HIV infection. Stall's syndemic theory postulates that variables such as social isolation, internalized homophobia, self-censoring and gay socialization account for an increase in susceptibility to a broad range of negative mental and physical health-related outcomes. Limited support has been demonstrated for the theory (Egan et al., 2011; Mustanski, Garofalo, Herrick, & Donenberg, 2007), although social, emotional and cognitive factors are suggested as necessary to help explain HIV risk (Moeller, Halkitis, Perry, & Surrence, 2011; Egan et al., 2011).

Theory

Numerous health behavior theories have been applied to HIV risk behaviors to further understanding of why MSM continue to experience disproportionately high rates of HIV infection. Importantly, these theoretical approaches then can be used to develop effective prevention programs to target the identified variables that relate to risk behavior among populations that bear an unequal burden of risk. Similar to the complex factors related to HIV risk, the interventions range from individual, community and structural level interventions. Some of the most popular theories have focused on individual level social cognitive factors. Health behavior researchers have amassed thirty years of

research that provides strong support in regard to effectiveness of the Theory of Planned Behavior (Ajzen & Fishbein, 1980) and the Transtheoretical Model (Prochaska, 1992). The Health Action Process Approach (Schwarzer, 1992) is another model that attempts to better account for behavioral changes by combining elements from these and other health behavior models.

The present thesis study combined components from the Theory of Planned Behavior, the Transtheoretical Model and the Health Action Process Approach to explain condom use among a sample of MSM from Iowa and bordering cities who use the Internet to seek sexual partners. From the Transtheoretical Model, Stages of Change was used. Based on the element of time, individuals are categorized in one of five stages based on their readiness to change (Prochaska, 1992). From the Theory of Planned Behavior the present thesis study measured the antecedents of the model, which include *subjective norms* or perceptions regarding what one believes others would do and what one believes others think one should be doing, *attitudes* or overall feelings towards performing the behavior and *perceived behavorial control* or one's belief that he or she can perform the behavior. The three antecedents lead to intention to perform a behavior in a linear fashion. *Intention* is the level of motivation to engage in a behavior, which influences the likelihood that a behavior will occur (Ajzen, 1991). From the Health Action Process Approach *action planning*, or planning for the performance of the behavior, was assessed (Schwarzer, 2008).

In the current state of the literature, a legion of studies have focused on HIV risk behaviors and related variables in urban areas and only in the past five years have studies started to investigate rural areas (Horvath et al., 2006). A paucity of studies exists that investigate HIV risk behaviors among a high-risk group statewide and allow a better understanding of differences in HIV risk behaviors in rural versus urban areas of a particular state. Studies and intervention programs have focused on urban centers within

populous states rather than statewide initiatives to combat HIV infection rates among a high-risk group.

Additionally, studies over the past several years have shifted to a focus on the use of the Internet to meet sexual partners and researchers have begun a push to develop effective Internet-based HIV prevention programs (Pequegnat et al., 2007). Much more research is needed in this area to understand the relationship of Internet use of MSM and sexual behavior and importantly to assess the applicability of health behavior theories in understanding the variables related to the level of risk. Undoubtedly, Internet-based intervention studies must be based on a strong theoretical framework to ensure effectiveness (Rosser et al., 2009).

Rosser et al. (2011) argue that those working in HIV prevention must think differently about the Internet. Importantly, the Internet functions in multiple roles, namely as a tool and technological method to reach others and collect data, as an environment that is virtual and creates a unique structure, and as a community that involves its own culture and modes of communication. The authors state, "It's a mistake to conceptualize the Internet as one thing (e.g., a tool for recruitment or a risk factor for HIV). It's a revolutionary technology that has changed what we do (tool), how we relate (our environment), and who we are (community)" (p. S95).

Purpose

Therefore, the purpose of the present thesis study was to understand the relationship between behavioral predictors and intentions to use condoms for anal sex among Iowa MSM who use the Internet to seek sexual partners. An online survey of MSM recruited from a social networking site as well as an LGBT-oriented newspaper and website were used in this investigation. Specifically, the present thesis study was a partial test of the Theory of Planned Behavior combined with action planning from the Health Action Process Approach. Stages of Change, from the Transtheoretical Model, was considered as a complimentary component that stages the study's participants in

terms of readiness to change their condom use. As a whole, the components from across health behavior theories provided explanatory information that will assist Iowa's leading HIV prevention agency in appropriately tailoring Internet-based HIV prevention programming for MSM.

Research Questions

The study focused on three research questions. 1. From the Theory of Planned Behavior, What is the relationship between distal factors (e.g. normative beliefs, behavioral beliefs and self-efficacy) and antecedents (e.g. subjective norms, attitudes and perceived behavioral control)? 2. What is the relationship of the antecedents of the Theory of Planned Behavior, namely subjective norms, attitudes, perceived behavioral control, and intentions to use condoms? 3. From the Health Action Process Approach, what is the relationship of action planning and intentions to use condoms? 4. A fourth research question was included for exploratory purposes: From the Transtheoretical Model, how do the Stages of Change relate to norms, attitudes and perceived behavioral control?

Implications

The present thesis study seeks to inform the development of prevention programming based on significant predictors of intentions to engage in HIV risk behaviors. Firstly, this is the only study to date that applies elements from the Health Action Process Approach to an investigation of HIV risk behaviors among MSM. This will aid in understanding to what extent these elements increase the amount of variance in HIV risk behaviors explained in the sample. If found to be significant predictors, prevention programming might focus on increasing the amount of planning that MSM do prior to being in an environment where sexual acts may occur. This may include carefully planning the process of using a condom including obtaining condoms, carrying condoms and negotiating their use prior to engaging in sex.

Another implication is that the descriptive and explanatory nature of the study will guide the AIDS Project of Central Iowa (APCI), Iowa's largest agency for providing HIV prevention programming and HIV testing, in appropriately tailoring interventions to target MSM in Iowa who use the Internet to seek sexual partners. In July 2010, the agency received a $1.7 million five year grant from the CDC to target the rise in HIV infections among MSM in Iowa. The researcher of the present thesis study is employed at APCI and coordinates the CDC-funded project. The first step of the new intervention program implementation is to conduct a community identification process to better understand how to appropriately tailor interventions. This step involved conducting a thorough investigation of the community in order to identify relevant factors that relate to HIV risk behavior. Notably, a majority of MSM who use the Internet to meet partners are not being reached by offline HIV prevention. In a large Internet-based study of MSM, only 47% indicated that they had ever attended an HIV prevention workshop (Wilkerson, Smolenski, Horvath, Danilenko & Rosser, 2010).

In order to inform the intervention, the findings of the study will provide useful information. For example, the study may find that norms are a significant predictor of intentions to use condoms during anal sex in the future. An intervention would include a marketing campaign to alter norms among MSM through messaging that shows that most other MSM use condoms for anal sex and that MSM approve of other MSM using condoms. Online videos, web banners, role model stories could be created to promote changing norms in the community. The campaign may include identifying individuals in the community who are popular and trendy who may have more of an impact in changing community norms. These individuals could be used in marketing materials and recruited as peer advocates who would talk to others within their social networks about condom use and provide disconfirming information to current norms.

Following the first chapter, the thesis has four additional chapters. Chapter 2 presents theory and research relevant to the research questions and is divided into three

sections. The chapter concludes with a summary of the current state of the literature and a statement of the hypotheses. In Chapter 3, the methods for the cross-sectional research design will be described. I will begin by covering the selection process for the sample of MSM in Iowa and bordering cities who use the Internet and then present a description of the sample characteristics. Following this, the discussion of the methods includes a detailed description of the data collection process with a discussion of the benefits and risks for study participants. The chapter will conclude with a description of the instrument and measures used to collect data and an account of each measure's validity and reliability. Proposed statistical analyses will be described. Chapter 4 contains the results of the study. Chapter 5 includes five subsections: 1. a summary of the results; 2. an interpretation of the results; 3. a description of the strengths and weaknesses of the study; 4. a discussion of the implications; and 5. the conclusions that may be drawn from the study.

CHAPTER 2

LITERATURE REVIEW

Organizational Statement

The literature review is organized into four sections based on the theories that serve as the framework for the components tested in the present thesis study. First, an introduction of the theories of health behavior is presented along with general critiques of the models based on current research and relevant debates among researchers of health behavior change. Second, the Transtheoretical Model is discussed with an emphasis on the Stages of Change component and related research on its use. Third, the Theory of Planned Behavior is explained in detail with a discussion of each of the theory's components that will be investigated in the present thesis study along with relevant research. Fourth, the Health Action Process Approach is presented as an attempt to combine theories into one model. Specifically, action planning and related research will be discussed as a way to address a weakness of the Theory of Planned Behavior. The literature review will conclude with a summary of the framework for the present thesis study and a presentation of the research hypotheses.

Theories of Health Behavior

Health behavior theories have been researched in regard to many behaviors, such as smoking, dietary intake, exercise and condom use. Empirical support for the theories' ability to predict behavioral outcomes has been demonstrated through a large and growing body of research. Furthermore, the theories have been applied to interventions to reduce risky sexual behavior, such as through increased condom use, with favorable outcomes (Albarracin, Gillette, Earl, Glasman, Durantini & Ho, 2005). For MSM, as well as other at-risk populations, sexual health behavior researchers have focused their attention on condom use as the most effective way to reduce risk of HIV infection among those who are sexually active. Notably, preliminary trials are being done to test the

efficacy of other strategies such as rectal microbicides, a lubricant that contains HIV medications; and pre-exposure prophylaxis which requires MSM at high risk to take daily HIV medications with the possibility of reducing risk of infection (Landers, Pickett, Rennie, & Wakefield, 2011).

Traditionally, theories of health behavior have been classified in two ways, either as stage models or continuum models. Debate and discussion have followed about which models are better in terms of predicting behavior and designing effective interventions. Whereas stage models focus on motivation and explanation of behavior, continuum models are centered on behavioral prediction through a linear process from predictor variables to performance of a behavior (Schwarzer, 2008). Instead of referring to continuum and stage models, Velicer and Prochaska (2008) suggest a differentiation of these theories of behavior and theories of behavior change. In their view, theories of behavior focus on static variables (continuum models) and theories of behavior change emphasize dynamic variables that change over time and are inherently non-linear (stage models). Whereas some researchers have made attempts to combine theory and stage models into one approach (Schwarzer, 2008), other researchers argue that a dichotomy is necessary due to the fundamental differences in the structure of the two types of models which provide the most clear and useful information as distinct conceptualizations (Sutton, 2008).

Regardless of the behavior change model used, a major critique when using the models to explain and design interventions for sexual behavior change is the focus on social-cognitive factors. The models focus on intrapersonal variables that are conceptualized as central factors in predicting behavior change. The dyadic nature of the relationship between the two individuals involved in a sexual encounter is an important component that has been investigated by some researchers in sexual behavior research (Svenson, Ostergren, Merlo & Rastam, 2002). An individual must negotiate with a partner regarding safe sex and must respond to competing social-cognitive factors of both

individuals, such as being in different stages of change for condom use or perceiving different social norms for condom use. Marin, Gomez, Tschann and Gregorich (1997) note that social-cognitive models do not address the impact of the cultural and social context of behavior and the authors mention the pervasiveness of coercive sexual encounters that may limit or nullify a person's volitional control over behavior.

While acknowledgement and respect are given to the complex nature of sexual behavior and sexual relationship dynamics, health researchers have recognized the importance of parsimony in behavior change models with a focus on relatively few variables that strongly relate to behavioral outcomes (Lippke & Ziegelmann, 2008; Prochaska, Wright, & Velicer, 2008; Fishbein, 2000). For example, Triandis (1977) proposed the Theory of Interpersonal Behavior that emphasizes the affective component and beliefs related to norms and roles in a complex model that health behavior research has not investigated thoroughly, in large part due to the model's complexity. In fact, a search of articles related to sexual risk and the theory yield no empirical investigations of the model in the last ten years. The present thesis study will focus on a small set of variables found to be strong predictors of behavior and effective intervention outcomes in studies of condom use.

Another argument points out that most of the popular social-cognitive models assume that behavior is intentional and an individual must be motivated to perform the behavior, which implies that behavior is reasoned and purposeful. Marin et al. (1997) posits that "sexual behavior may be impulsive and motivated physiologically and emotionally rather than rationally" (p.458). Shuper and Fisher (2008) demonstrated the impact of sexual arousal in their experimental study of HIV positive MSM wherein participants had greater intentions to engage in risky sexual behavior when sexually aroused. Cross-sectional web-based survey research with HIV negative MSM has suggested that sexual arousal may play a role (Horvath, Oakes, & Rosser, 2008; Kok, Hospers, Harterink and De Zwart, 2007). Gibbons, Gerrard, Blanton and Russell (1998)

proposed a dual process model in which a heuristic path is included in addition to the intention-behavior link. With the heuristic path, an individual's prototypes and behavioral willingness can result in engagement in risky behavior even when intentions not to engage in the risky behavior are present. The authors have demonstrated empirical support for their model, but note the model applies when a behavior is new and not yet habitual so that the model significantly predicts behavior among adolescents (Gibbons, Houlihan & Gerrard, 2009). In their view, as individuals increase in age, behavior reaches a point at which intentions, not heuristic pathways, are predictive of behavior, including condom use.

In studies of MSM and condom use, numerous variables have been examined as supplements to the models' components in an attempt to account for additional variance in intentions to use condoms or in future condom use behavior. The variables include sexual compulsivity, sexual comfort, sexual behavior discontrol, anticipated regret, personal norms, descriptive norms, sexual fantasies about unprotected sex, sexual sensation-seeking and use of substances (Miner, Peterson, Welles, Jacoby, & Rosser, 2009; Kok et al., 2007; Berg, 2008). Generally, the variables were weak to moderate predictors or not significant predictors of intentions or behavior. For example, in Kok et al. (2007), the addition of anticipated regret, personal norms and descriptive norms to the Theory of Planned Behavior components, increased the amount of variance explained from 55% to 70%. Fishbein (2000) suggests that these and other variables that may supplement the models are best seen as distal factors that are background variables.

Though the leading health behavior theories have established strong empirical support for their ability to explain and predict behavior as well as provide the foundation for effective interventions, limitations and shortcomings of the models exist. While important points are raised by critics in an attempt to improve understanding of health behavior, other models that provide viable alternative theories that explain behavior have not been developed. Thus, the present thesis study will focus on combining components

from available theories in order to most assuredly inform future interventions in Iowa to address HIV risk behavior among MSM who use the Internet to seek sexual partners.

Transtheoretical Model

The Transtheoretical Model (TTM) is the most heavily discussed and well-researched stage model (Velicer & Prochaska, 2008). The model is described as a comprehensive and inclusive model of behavior change that includes elements from other theories such as Social Cognitive Theory. TTM's most prominent component is the stages of change. Individuals process through five stages, but may cycle back and forth or skip over stages before advancing to the final stage in which behavior change is maintained. The Transtheoretical Model is a non-linear, spiral model in which individuals may cycle through various stages over time (Prochaska, 1992). The five stages are pre-contemplation, contemplation, preparation, action and maintenance. In the pre-contemplation stage, there is no intention to change the risk behavior. In the contemplation stage, individuals may form intentions and are considering changes in the next six months. In the preparation stage, there is an intention to change in the next month. During the action stage, the individual is beginning to make changes in performance of a health behavior. Lastly, the maintenance stage is when individuals have been engaged in the behavior change for at least six months.

Three major components of the TTM are conceptualized as factors that relate to one's movement through the stages of change. These components include decisional balance, perceived self-efficacy and processes of change. First, decisional balance is typically referred to as the pros and cons, or positive and negative aspects of engaging in behavior change. At less advanced stages of change, the cons of behavior change are more salient to the individual, whereas in more advanced stages of change the pros of behavior change are more important (Galavotti, Cabral, Lansky, Grimley, Riley & Prochaska, 1995). Notably, the decisional balance closely aligns with the behavioral beliefs and attitudes from the Theory of Planned Behavior that will be discussed in detail

in the next section (Noar, Morokoff & Redding, 2001). Second, perceived self-efficacy, defined as confidence in one's ability to perform a behavior, closely aligns with control beliefs and perceived behavioral control of the Theory Planned Behavior discussed in the next section. Generally, the TTM suggests that individuals perceive more self-efficacy as they advance through the stages of change (Galavotti et al.). Thirdly, processes of change draws from various theories of psychotherapy to create a grouping of processes by which people change their behavior such as consciousness-raising, counterconditioning, and self-liberation (Prochaska, 1992).

Stages of change have been used to assess readiness to change health behaviors. In regard to sexual behaviors, stages of change are used to assess condom use. Studies have investigated the relationship between the stages of condom use among various at-risk populations and have shown that the stages of change discriminate among participants by categorizing them in terms of condom use, with participants in less advanced stages of change reporting less condom use. Some studies have investigated the relationship between the stages of change and predictors of progress through the stages of change for condom use. Importantly, endorsing more pros for condom use has been shown to relate to advancement in stages of change across studies. While many studies have used samples other than MSM, which may impact findings due to the complex factors such as stigma and homonegativity presented in Chapter 1, studies that investigated sexual behavior and condom use among other high risk populations suggest relationships among variables that may apply to samples of MSM as well.

Research has considered how advancement through stages of change relates to other variables with the TTM. Grossman et al. (2008) used a subset of voluntary, large sample of late adolescent participants, mostly heterosexual with a majority being female and African-American. The participants were randomly assigned to a control condition in which use of the intervention was delayed so that the sample did not receive an intervention during the study's investigation. Participants were assessed at baseline and

at six month follow-up with variables from the TTM, TPB and Health Belief Model in relation to condom use. The study variables included stages of change, pros and cons of condom use, subjective norms (from TPB), perceived invulnerability to HIV (Health Belief Model) and condom use communication and negotiation. For analysis purposes, participants in the pre-contemplation, contemplation and preparation stages of change were categorized as inconsistent condom users, where as those in action or maintenance were identified as consistent condom users.

The results showed that consistent and inconsistent condom users were significantly different on reported pros and cons of condom use (inconsistent users reported more cons and less pros), on peer norms (inconsistent users reported greater norms for unsafe sex) and on perceived invulnerability to HIV (inconsistent users reported a higher level of invulnerability). Furthermore, all variables except peer norms were related to movement through the stages of change at six month follow up. Reported pros of condom use and condom communication were the strongest predictors of progress across stages of change. Participants who had higher scores on the pros of condom use and reported more condom communication were more likely to progress in stages of change over the six month period (Grossman et al, 2008).

Pros of condom use, along with self-efficacy and attitudes toward condom use were related to advancement through stages of change in a study of heterosexual college-aged men. The cross-sectional survey of mainly white students recruited from required social science classes and fraternities was conducted to assess condom use in relation to stages of change, condom self-efficacy, pros and cons of condom use and process of change from TTM. In addition, condom attitudes were measured in order to assess whether attitudes would add to the variance accounted for by pros and cons which has been suggested to be a highly overlapping construct. Approximately half of the participants did not report having had sex in the last 30 days and were excluded from the analysis. In the study, stages of change were used only to classify participants; however,

these classifications were not used in subsequent analyses. The results of a multiple regression analysis showed that pros of condom use, self-efficacy, attitudes and process of change variables all accounted for unique variance in the regression model predicting condom use with a total of 55% of the variance in condom use explained by these variables (Noar et al., 2001). The findings suggest that the model provides a strong explanation of condom use among the sample.

Relatively few studies have investigated stages of change and condom use among MSM. Gullette and Turner (2004, 2003) recruited a convenience sample of gay and bisexual men from randomly selected gay or bisexual-oriented websites on the Internet. Participants were white, well-educated, older with a mean of approximately 35 years of age and mostly within the U.S. The respondents completed an online cross-sectional survey to assess stages of change, decisional balance and self-efficacy, income and age. Importantly, use of condoms with both primary and casual partners was measured separately. Condom use has been shown to differ by partner type.

Gullette and Turner (2004) reported that, for anal sex, the majority of participants were in the pre-contemplation stage for condom use, whereas the majority of participants were in the maintenance stage of condom use with casual partners. With primary and casual partners, different variables were significantly associated with being in an advanced stage of change. For primary partners, being older, reporting more pros to condom use and greater confidence in the effectiveness of condoms were related to an advanced stage of change. For casual partners, participants who reported fewer lifetime partners and those who reported greater confidence in the effectiveness of condoms were related to an advanced stage of change. Participants who reported lower levels of pros for condom use were less likely to report condom use for primary and casual partners. Similar to other studies using the TTM, cons for condom use did not change across stages of change and was not significant. Additionally, those who reported not being tested for HIV reported lower levels of condom use with primary and casual partners. Finally, gay

and bisexual men differed in use of condoms for anal sex. Gay men reported significantly higher rates of condom use than bisexual men (Gullette & Turner, 2004, 2003).

Although, studies have suggested that stages of change may not be related to behavior change across all at-risk groups. In a study utilizing a small, purposive sample of HIV positive male and female youths, including gay, lesbian, bisexual and heterosexual recruited from an HIV clinic, stages of change and self-efficacy from the TTM were studied in relationship to condom use over the past three months. The researchers used a path analysis and found that self-efficacy completely mediated the relationship between stages of change and condom use. The study provides some limited evidence to suggest that stages of change may not appropriately categorize participants into distinct stages of readiness to change and that other continuous variables such as norms and attitudes may be more applicable as targets in effective behavioral interventions (Naar-King, Wright, Parsons, Frey, Templin & Ondersma, 2006). Importantly, the study suggests the need to look at other variables in investigations of condom use in addition to the stage of change that may be related to condom use.

Based on the majority of studies that have been published on stages of change and condom use, it is plausible that participants in less advanced stages of change will report more negative attitudes about condom use, report less subjective norms for condom use and perceive less behavioral control over condom use.

Theory of Planned Behavior

The Theory of Planned Behavior (TPB) is a leading theory of behavior that explains as well as predicts behavior. TPB has been shown to account for substantial variance in many types of behavior (Fishbein, 2008; Kok et al., 2007; Albarracin, Johnson, Fishbein, & Muellerleile., 2001; Ajzen, 1991). Fishbein, one of the theory's strongest proponents, argues that behavior can be explained by a relatively parsimonious set of variables. TPB is focused on social and cognitive variables related to behavioral

performance, which include subjective norms, attitudes and perceived behavioral control (see Figure 1). The social-cognitive factors, or antecedents, of behavior stem from salient beliefs which are considered to be the antecedents of subjective norms, attitudes and perceived behavioral control (Ajzen, 1991). Fishbein and Ajzen (1975) note that beliefs link attributes to an object and, therefore, are the foundation for the social cognitive antecedents.

Initially, the theory only included the antecedents of attitudes and subjective norms, called the Theory of Reasoned Action (Fishbein & Ajzen, 1975). The theory is still utilized in many investigations as well as in the creation of effective interventions. Perceived behavioral control was added in response to Bandura's social cognitive theory, which promotes the construct of self-efficacy, or the belief in one's ability to perform a behavior, as necessary to comprehension and prediction of behavior (Bandura, 1994; Fishbein & Yzer, 2003). The addition to address one's perceived sense of control is especially important in investigations of sexual behavior, where perceptions of control may vary based on the relationship dynamics with the sexual partner (Svenson et al., 2002).

In general, the beliefs that are most important and relevant to an individual will determine his or her intention to engage in behavior which, in turn, leads to the performance of the behavior (see Figure 1). Beliefs are considered to be the distal antecedents and subjective norms, attitudes and perceived behavioral control are the proximal antecedents of behavior. While an individual holds a plethora of beliefs, certain beliefs are thought to be salient as determinants of behavior. These beliefs are normative beliefs, behavioral beliefs, and control beliefs. According to the TPB, the three types of beliefs underlie and lead to an individual's subjective norm, attitudes and perceived behavioral control. Although, studies have found only moderate support for beliefs as the foundation for the behavioral antecedents (Ajzen, 1991).

Normative beliefs are beliefs about whether important individuals, groups or communities that serve as referents for the individual approve or disapprove of the behavior. Additionally, motivation to comply is an individual's willingness to act in accordance with the perceived norms of referent others and one's beliefs about what one should do. Subjective norms stem from the beliefs and are general perceptions about important others' opinions about a behavior (Francis et al., 2004).

Behavioral beliefs are beliefs about the outcomes of the behavior and evaluative beliefs regarding the positive and negative evaluations of the outcomes, which are hypothesized to drive attitudes in proportion to the strength of the beliefs. If strong positive or negative beliefs exist about the outcomes of the behavior, attitudes will be strongly positive or negative. Therefore, attitudes are the result of an evaluation of the positive and negative consequences of behavior (Fishbein & Yzer, 2003). Such an evaluation is related to the pros and cons of the Transtheoretical Model in the assessment of the advantages and disadvantages of behavioral performance (Noar et al., 2001).

Control beliefs are beliefs regarding one's ability to perform a behavior with respect to the individual's perception of the resources and opportunities that exist in order for him or her to successfully execute the performance. The control beliefs may be based on past experience, experiences of important others in an individual's life, and other factors that influence the perception of availability of resources and the possibility of opportunities to perform a behavior efficaciously. If more barriers are perceived by the individual, behavior may be more unlikely. The control beliefs lead to perceived behavioral control which is defined as a person's perception of the ability to perform a behavior in spite of barriers that make performance more difficult (Fishbein & Yzer, 2003).

Notably, *perceived behavioral control* is considered to have an indirect and direct path to behavior. Behavior may be influenced indirectly by perceived behavioral control's influence on intentions, or directly impacted without intention as a mediator.

The direct path is most important for behaviors that are not under one's complete volitional control such as condom use which involves another party to achieve behavioral adherence. Intentions assume that one's strong efforts to perform the behavior will result in behavioral performance. To the extent that behavior is not under volitional control, the direct path to behavior may be necessary.

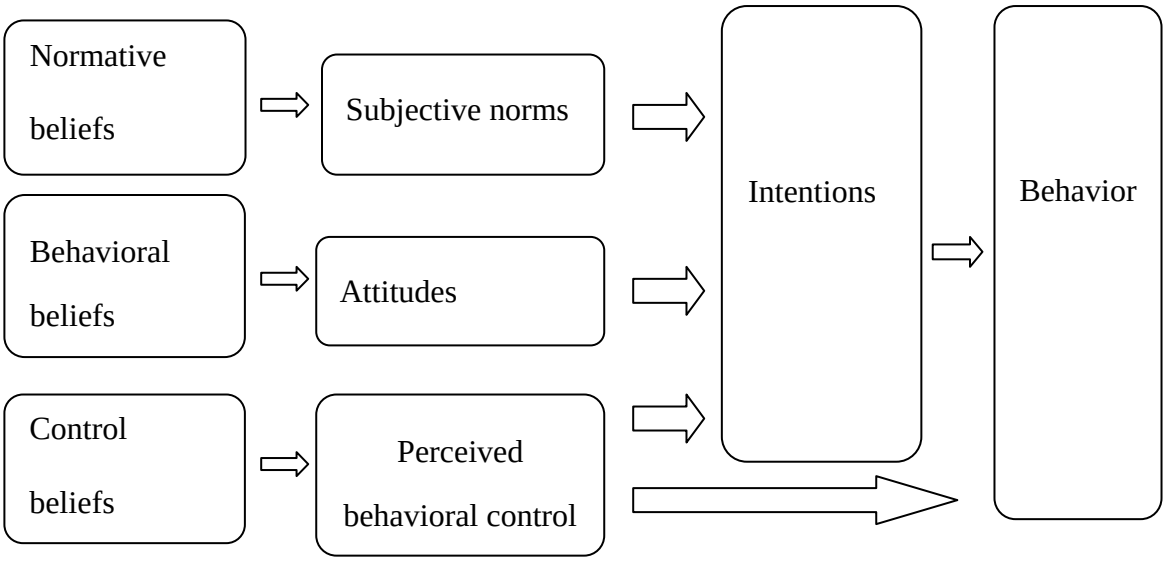

Figure 1. The relationship of distal factors, antecedents, and intentions to behavior in the Theory of Planned Behavior.

Source: Ajzen, I. (1991). The theory of planned behavior. *Organizational Behavior and Human Decision Processes, 50,* p.187.

Subjective norms, attitudes and perceived behavioral control lead to intentions. *Intentions* directly lead to behavior in the TPB model and are believed to be the strongest predictor of behavior (see Figure 1). *Intention* is considered to be the motivation to engage in a behavior (Ajzen, 1991). Fishbein (2008) emphasizes that the likelihood of

engaging in the behavior is central to the definition. For purposes of the current study, *intentions to use condoms during next sexual encounter* will be the outcome variable for behavioral prediction with the TPB. This operationalization is similar to some studies reported below. The cross-sectional nature of the current study will preclude a predictive assessment of behavior.

Studies have investigated the relationship of the antecedents from the theory to predict intention to use condoms or post-diction of past sexual risk behavior. The studies suggest that norms, attitudes and perceived behavioral control or self-efficacy are strong predictors of intentions to use condoms and past risk behavior (Albarracin et al., 2001). This has been demonstrated across studies of various samples and demographics. As Fishbein (2000) points out, samples vary in terms of which antecedents are the strongest predictors due to group differences. For example, while norms may be the strongest predictor of behavior, or intentions, for a sample of urban HIV positive MSM, the strongest predictor among a rural sample of young MSM may be different or an antecedent may not even be a significant predictor.

Kok et al. (2007) used the Theory of Planned Behavior in an investigation of intentions to use condoms for anal intercourse with an e-date (someone they met online). The study recruited a large, non-probability purposive sample of Internet-using MSM in the Netherlands from the country's most popular chat site to take an online survey. Measures were created by the researchers based on their past research as well as participant observations of chat rooms. Composite measures were used for attitudes and self-efficacy, but single items were used for subjective norms and intention to use condoms with a future e-date. The results showed that the TPB antecedents accounted for 55% of the variance in intentions to use condoms.

Norms and self-efficacy were studied in relationship to unprotected sexual encounters in the past two months in a postdictive study by Berg (2008). He found differences in a sample of MSM who identified as barebackers and those who did not.

Norms and self-efficacy were measured using previously published instruments. The study looked at differences in these variables as well as use of alcohol and drugs, and sexual sensation seeking among those who identified as barebackers and non-barebackers. Questions were asked to assess barebacking and included the definition that this identifier referred to those who engaged in intentional unprotected sex with casual partners. The study relied on a convenience sample of 240 MSM recruited from 10 gay websites, which resulted in a sample that was mostly urban, white and well-educated. The results showed that barebackers engaged in significantly more unprotected anal intercourse, met more partners online, used more alcohol and drugs and reported higher levels of sexual sensation seeking. Importantly, barebackers reported significantly lower levels of self-efficacy in limiting HIV risk behaviors and lower levels of norms related to perceptions of MSM in their social networks' endorsement and engagement in safer sex.

Components of the TPB were studied by Miner et al. (2009) and found to be significantly related to reported risky sexual behavior among HIV positive MSM. The study utilized a large convenience sample of HIV-positive MSM in six U.S. cities who volunteered to participate in a trial of an HIV prevention program that were predominantly low SES and African-American. Safer sex behavior functioned as the outcome variable. The study extended the TPB by adding other variables that were hypothesized to be related to safer sex practices including sexual comfort, which measures comfort with one's sexuality and body, and sexual behavior discontrol, which measures inability to control behaviors across different situations. The authors considered broad measures of self-efficacy to be important so that behavioral domains are measured which include the converse of efficacy, inability to control, in addition to ability, or efficacy. These variables were expected to relate directly to past risky sexual behavior and indirectly through condom self-efficacy. Also, social support was measured in addition to social norms because the authors hypothesized that social norms would influence risk behavior to the extent that social support was related to social norms. In

this study, intention to engage in safer sex during next sex was conceptualized as a predictor of unsafe sex in the last three months. Importantly, unsafe sex included serosorting and condom use as risk reduction techniques.

Miner et al. (2009) found that all the predictor variables were significantly related to unsafe sex in the past three months. Social norms mediated the relationship between social support and risky sexual behavior. Social norms also were positively related to condom use self-efficacy as well as intentions. Greater self-efficacy predicted less risky sexual behavior. Behavioral discontrol was related to more sexual risk behavior and influenced unsafe sex separate from self-efficacy, suggesting that both behavioral discontrol and self-efficacy were important components of the efficacy construct.

Another study of HIV positive MSM provided support for the TPB to predict intentions to use condoms. Van Kesteren, Hospers, van Empelen, van Breukelen and Kok (2007) conducted a study offline with participants recruited through hospitals in the Netherlands with a response rate of 28%. They assessed intentions to use condoms with primary and casual partners among respondents who identified as gay or bisexual. The results showed that the TPB components accounted for 53% of the variance in intentions to use condoms with primary partners and 52% of the variance with casual partners.

In a meta-analysis of studies that used the Theory of Reasoned Action or the TPB to examine condom use, Albarracin et al. (2001) analyzed 96 studies published and unpublished internationally. Overall, the meta-analysis found support for the use of the TRA and TPB in explaining variance in condom use. The studies included in the meta-analysis were across all types of sexual activity and sexual orientation. Two models were used to assess these data and both were found to be a good fit. Attitudes were found to be the strongest predictors of behavior. Perceived behavioral control was a moderate predictor of intention, but its direct influence on behavior was weak.

Importantly, the antecedents of the Theory of Reasoned Action and TPB have not been tested nearly as often as predictors of future behavior. Albarracin's meta-analysis

included some studies that assessed future behavior. For studies that assessed future behavior predictively, past behavior was separated from future behavior for analysis. Among these studies, the correlation among theoretical components was less strong when past behavior was removed from the model. This finding suggests that the TPB, with the majority of studies assessing relationships of antecedents to past behavior, the strength of the model may be weakened in predictive assessments. However, past behavior alone was not a strong predictor of future behavior.

Additional studies have not explicitly examined TPB or TRA but included components that match with the theories and thus provide additional evidence of the relationship between antecedents and sexual risk behavior. A study that suggested the relationship between positive attitudes and safer sex behavior was conducted by Benotsch et al. (2002). In a convenience sample of men at a pride parade in Atlanta, participants were asked about HIV/AIDS knowledge, condom attitudes, substance use, meeting partners online and sexual risk behavior. In a regression analysis, all of the study variables contributed uniquely to the explained variance. Those with more HIV/AIDS knowledge, more positive condom attitudes, less nitrite use (poppers) and not using the Internet to meet partners predicted less risky sexual behavior.

Horvath et al. (2008) provided a clearer explanation of the relationship between intentions and sexual risk behavior among MSM in an investigation of communication about intentions to engage in safe sex behaviors with partners met online or offline, namely avoiding anal sex, using condoms and exchanging HIV status information, and intentions to engage in risky sexual behavior, or unprotected anal intercourse.

A large, convenience sample of MSM recruited from a popular gay-themed website completed an online survey. Of the relatively young and low income men in this study, 55% (14% unprotected) of men reported engaging in anal intercourse with the most recent online partner and 53% (15% unprotected) with an offline partner. The slight difference between online and offline partners was not significant. However, a chi-

square analysis revealed differences in groups by serostatus and whether participants had been tested for HIV. For online and for offline partners, men who had been tested for HIV were more likely to have communicated about the partner's HIV status and have communicated their HIV status to the partner compared to those who had never been tested or were HIV positive. Men who had never tested for HIV were more likely to communicate the intention to avoid anal sex than men who had been tested, and participants who had been tested were more likely to avoid anal sex than HIV positive participants. Men who had been tested for HIV were more likely to communicate the intention to use condoms than the other two groups. Lastly, participants who were HIV positive were more likely to chat about the intention to have unprotected anal sex than the other two groups.

The communicated intention categories were used as predictors of reported safe and unsafe behavior at last intercourse in a multiple regression analysis. Except for men who had tested for HIV and indicated a most recent partner met online, serostatus disclosure was not related to having engaged in unprotected anal intercourse (UAI). Communicated intentions to use condoms or avoid anal sex were significantly related to lower odds of having UAI. Further, communication of intention to engage in UAI was strongly related to reported engagement in UAI with one's most recent partner. In the sample, the communication of intention variables were able to account for 88 to 94 percent of the variance among the participants grouped by HIV testing/status and online/offline most recent partner. Thus, intentions that are actively communicated to sexual partners were very strong predictors of behavior, though the relationship was studied postdictively.

A fundamental aspect of assessing theory is through a controlled intervention study. Project RESPECT, a CDC-funded program, was based on the Integrative Model of Behavioral Prediction (IM). TPB is central to this model, but the model also includes elements from the Health Belief Model. The study was a randomized controlled trial that

comprised four conditions with a sample of high-risk heterosexuals that were mainly African American and Latino (Rhodes, Stein, Fishbein, Goldstein & Rotheram-Borus, 2007). In the enhanced intervention condition, participants worked intensively with group facilitators who sought to increase positive attitudes towards condoms, self-efficacy in using condoms and social norms of partners and friends of condom use. Participants were assessed at baseline and three-month follow-up with measures of norms, attitudes, self-efficacy and intentions in addition to the belief measures of positive behavior beliefs, negative behavioral beliefs, general normative beliefs and partner normative beliefs.

Structural equation models supported the components of TPB as predictors of condom use intention. For both main and casual partners, attitudes were the strongest predictor of intentions. Gender differences were evident in that self-efficacy was a stronger predictor for women than men for main partners, which may be related to the difference in volitional control of condom use. Also, whereas perceived norms did not influence intentions for women, they were a significant, weak predictor for men with main partners. Interestingly, changes were noted from baseline to follow-up. Perceived norms showed a stronger relationship for intentions to use condoms with main partners. Self-efficacy showed a stronger relationship with intentions to use condoms with casual partners. The relationship of intentions and attitudes was weaker at follow-up for all groups except for men with main partners. Importantly, these results showed change in behavior in addition to a difference in intention. With respect to reported condom use, participants in the enhanced intervention condition showed significant increases in condom use for both men and women with primary and casual partners when compared to the other study conditions.

For the present thesis study, two research questions are related to the Theory of Planned Behavior: 1. What is the relationship between beliefs (normative beliefs, behavioral beliefs and self-efficacy) and subjective norms, attitudes and perceived

behavioral control? According to the TPB, a positive relationship should exist with the beliefs and the corresponding antecedent (see Figure 2) 2. What is the relationship of antecedents of the Theory of Planned Behavior, namely subjective norms, attitudes, perceived behavioral control, and intentions to use condoms at next sex? Based on the research presented, it is expected that subjective norms, attitudes and perceived behavioral control will be significant predictors of intentions to use condoms (see Figure 2). In the figure, subjective norms, attitudes and perceived behavioral control lead to intentions to use condoms. As proposed by the model beliefs underlie the three proximal antecedents and are represented as distal factors with the three proximal antecedents following from the beliefs in the model.

An alteration of the TPB model should be noted in Figure 2. Control beliefs and perceived behavioral control are closely linked to the concept of self-efficacy (Kok et al., 2007) and studies using the TPB have included self-efficacy measures for the antecedent of perceived behavioral control (Miner et al., 2009; van Empelen & Kok, 2008). In addition to studies that have used self-efficacy as a replacement for perceived behavioral control, other studies suggest that the two concepts are related but separate constructs (White, Terry & Hogg, 1994). Moreover, debate exists about whether self-efficacy should function as a distal or proximal factor in relation to perceived behavioral control. That is, studies have envisioned self-efficacy as an additional antecedent along with perceived behavioral control. However, it seems plausible that self-efficacy for condom use could lead to perceived behavioral control. In fact, both control beliefs and self-efficacy are conceptualized as one's ability to perform a behavior. In the present thesis study, condom self-efficacy will be tested as a distal antecedent in the proposed model (see Figure 2).

Health Action Process Approach: Intention-Behavior Gap and Action Planning

Recent conceptual articles and studies have moved toward a focus on the ways in which elements of continuum and stage models may be compared or combined to gain an enhanced understanding of the predictors of health related behaviors. Lippke and Ziegelmann(2008) in a special edition of the Applied Psychology began to address this area and pointed to the need for additional studies that attempt to move the knowledge forward to ultimately devise prevention programs that contain approaches informed by the most significant predictors of health behaviors across theoretical models.

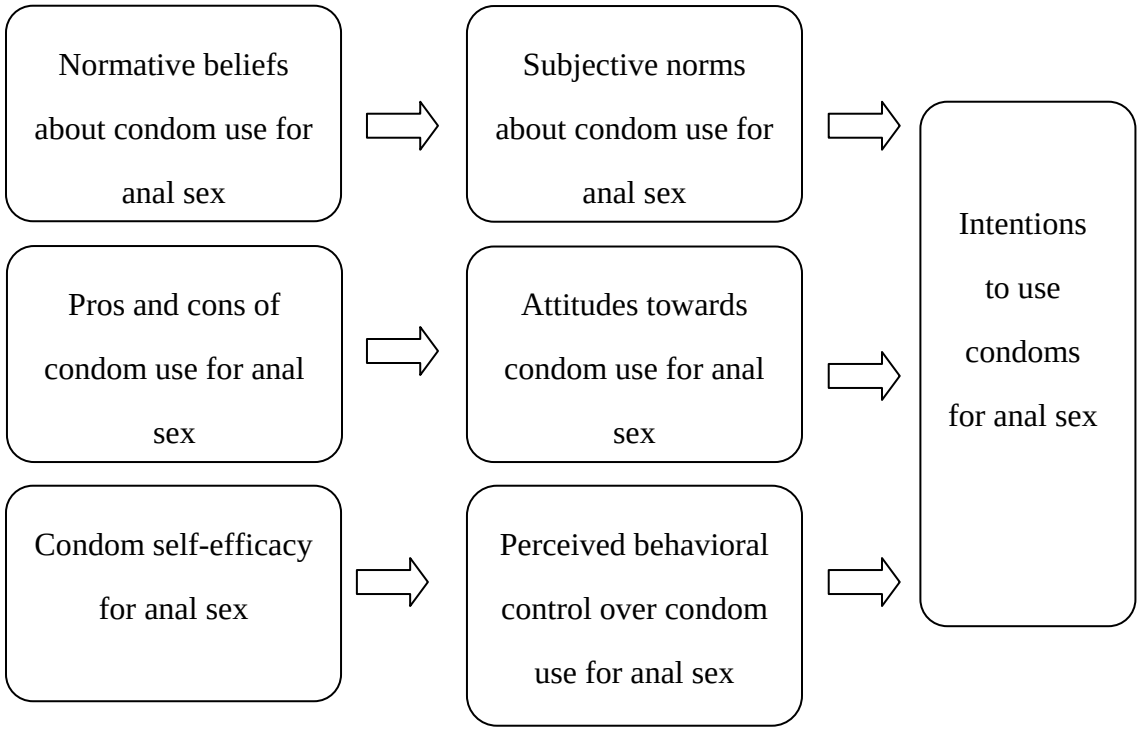

Figure 2. Relationship of the distal factors and antecedents for the present thesis study to intentions to use condoms for anal sex.

Health Action Process Approach is an attempt to combine continuum and stage models into one approach. The model includes motivational and volitional stages. The inclusion of the volitional stage in the approach directly addresses the argument that intentions alone are not the strongest predictor of behavior, a refutation directed at the Theory of Planned Behavior. Schwarzer (2008) cites various studies that have shown the relationship between intentions and behavior as weak to moderate at best. In his view, the Theory of Planned Behavior is only a strong predictor of intention to perform a behavior. Thus, the theory seems only to successfully predict the motivational phase, while leaving out important action steps that may more strongly predict behavior.

Since the early 1990s, a topic that has received considerable attention in Europe among researchers in health and social psychology is the finding that the continuum models of TRA and TPB include antecedents that are strong predictors of intentions, but intentions are only weak to moderate predictors of future behaviors (Schwarzer, 2008; Conner, 2008; Mohiyeddini, Pauli & Bauer, 2009; Abraham et al., 1999). That is, intentions many times do not translate into behaviors. This is referred to as the intention-behavior gap. Researchers have postulated on ways to fill the gap and research has begun to test variables that may increase the amount of the variance in behavior that is explained. Interestingly, none of the research was conducted by leading health researchers within the United States. However, Fishbein (2000) proposed the Integrated Model that acknowledges that environmental factors and skill level may influence the intention-behavior relationship without emphasizing the importance of the factors. Though Velicer and Prochaska (2008) weighed in on a discussion of HAPA in terms of the stages included in the model, proponents of continuum models in the United States have been silent on the intention-behavior gap.

A key focus of research on the lack of relationship between intentions and behaviors has been on testing planning strategies as variables to bridge the gap (van Osch et al., 2009). The work of Schwarzer (2008) posits that action planning is a strong

predictor of behavior and mediates the relationship between intentions and behaviors. This variable stems from the belief that behavior is more likely to occur when an individual has carefully planned how to implement health behavior changes. Thus, *action planning* is the level of one's planning and involves instructions regarding where, when and how to bring about the change in behavior. More than an extension of intention, action planning is more specific and likely to result in the desired behavior due to the detailed consideration of the situational parameters and the sequence of action (Schwarzer, 2008).

Action planning has been investigated in relationship to health behaviors to assess the variable's ability to predict behavior more accurately than intentions. Indeed, studies have shown that action planning accounts for variance in behavior over and above the proportion explained by intentions alone (van Osch et al., 2009; Schwarzer, 2008; Abraham et al., 1999). The studies have been conducted regarding various health-related behaviors such as diet and exercise, but a paucity of studies investigated sexual behavior.

In studies of fruit consumption and high caloric snack intake that were conducted simultaneously, van Osch and her colleagues (2009) used a longitudinal design of large, random samples of Dutch participants recruited online, from a site of which they had volunteered to be a part, who agreed to complete surveys at baseline and one-month follow-up. The study investigated the independent variable of action planning in addition to past behavior, intention and self-efficacy. Action planning significantly added to the variance explained in both studies, though the proportion of variance explained was higher for fruit consumption.

In another study of fruit consumption, the same researchers used a similar method and sample. However, action planning was parsed out into prepatory planning and implementation planning. Implementation planning aligns closely with Schwarzer's (2008) definition for action planning with a focus on when, where and how a behavior

will occur. Preparatory planning refers to the consideration of actions that would need to be taken to prepare for the behavior change such as buying fruit.

The results showed that both were significant predictors; however, only preparatory planning was an effective predictor when both planning types were included in the same model (van Osch et al., 2009).

Action planning was investigated in relationship to exercise behavior in three studies utilizing participants in different types of rehabilitation. Large, purposive samples of German participants were utilized and assessments were given at baseline and two and four month follow-up. Though the amount of variance accounted for differed by each sample by rehabilitation type (24-34%), the three studies found that action planning was a significant predictor of adherence to physical exercise (Schwarzer, Luszczynska, Ziegelmann, Scholz & Lippke, 2008).

Though the results have provided support for planning strategies in filling the intention-behavior gap, the studies have investigated behavior that is generally under more complete volitional control than condom use. No longitudinal studies have been conducted to assess condom use in relation to action planning.

Abraham et al. (1999) used a cross-sectional survey design with a large sample of English heterosexual college students. Intentions, action planning, coping planning and level of condom use were measured. With the data on intentions, participants were classified as high or low intenders based on whether they planned to use condoms in the future or not. The results suggested that action planning and coping planning were predictors of condom use for high and low intenders. Moreover, the strength of the relationship was stronger for those in the high intention group.

In addition to action planning, alternative variables have been tested as possible mediators or moderators of the intention-behavior gap. These include coping planning (Schwarzer, 2008; Abraham et al., 1999), anticipated regret, conscientiousness, direct experience, temporal stability and past behavior (Conner, 2008). Furthermore, a study by

Mohiyeddini et al. argues that affective factors must be included to address the gap (2009). Due to the need to be parsimonious, the model's conceptualization as well as constraints on data analysis, the present thesis study focused on action as a variable that may bridge the intention behavior gap.

For the present thesis study, the research question related to the HAPA is: What is the relationship between action planning and intentions to use condoms at next sex? It is expected that people who have higher intentions to use condoms will report higher levels of action planning (see Figure 3). In the model, intentions to use condoms at next sex leads to action planning for condom use.

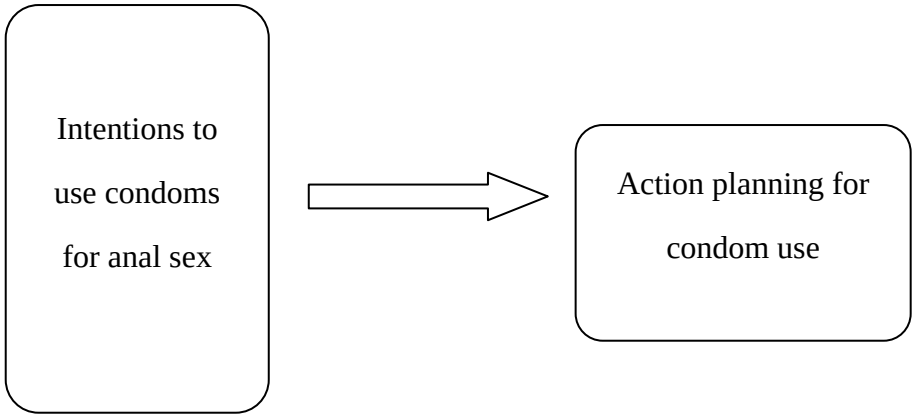

Figure 3. Proposed relationship of intentions to use condoms for anal sex to action planning for condom use.

Summary, Research Questions and Hypotheses

A growing body of empirical literature supports the use of components of the Transtheoretical Model and the Theory of Planned Behavior to explain condom use among various populations. While the research body is not as large with samples of

MSM, available data suggest that the theories provide an understanding of sexual behavior with MSM. Furthermore, effective interventions have been designed using components of the theories to increase condom use. However, relatively less evidence exists for the Health Action Process Approach in regard to condom use and no studies that test the model have sampled MSM. However, action planning has been investigated in other forms such as goal setting and goal prioritization and has shown that behavior is more likely to occur when these aspects of goal planning occur (Abraham, 2008; Gollwitzer & Sheeran, 2006).

The present thesis study proposes three research questions based on these theoretical models. Research hypotheses were tested related to each research question.

Research Question 1. From the Theory of Planned Behavior, What is the relationship between distal factors (e.g. normative beliefs, behavioral beliefs and self-efficacy) and antecedents (e.g. subjective norms, attitudes and perceived behavioral control)? Three hypotheses related to this research question were tested:

Hypothesis 1. There will be a positive relationship between normative beliefs and subjective norms.

Hypothesis 2. There will be a positive relationship between behavioral beliefs and attitudes.

Hypothesis 3. There will be a positive relationship between condom self-efficacy and perceived behavioral control.

Research Question 2. What is the relationship of the antecedents identified in the Theory of Planned Behavior, namely subjective norms, attitudes, perceived behavioral control, and intentions to use condoms? Four hypotheses related to this research question were tested:

Hypothesis 4. There will be a positive relationship between subjective norms and intentions: as subjective norms for condom use increase, intentions to use condoms will increase.

Hypothesis 5. There will be a positive relationship between attitudes and intentions: as favorable attitudes of condom use increase, intentions to use condoms will increase.

Hypothesis 6. There will be a positive relationship between perceived behavioral control and intentions: as perceived behavioral control over condom use increases, intentions to use condoms will increase.

Hypothesis 7. Attitudes, subjective norms and perceived behavioral control will be significant predictors of intentions to use condoms at next sex.

Research Question 3. From the Health Action Process Approach, what is the relationship of action planning and intentions to use condoms?

Hypothesis 8. There will be a positive relationship between action planning and intentions: as the level of intention to use condoms increases, the level of action planning will increase. The following hypotheses are for exploratory purposes:

The main purpose of the present thesis study does not involve the comparison of existing models. Therefore, an additional research question is included for exploratory purposes only: Research Question 4. From the Transtheoretical Model, how do the Stages of Change relate to norms, attitudes and perceived behavioral control?

Hypothesis 9. The level of subjective norms for condom use will differ by stage of change: participants in more advanced stages of change for condom use will report higher levels of subjective norms for condom use.

Hypothesis 10. The level of favorable attitudes for condom use will differ by stage of change: participants in more advanced stages of change for condom use will have more favorable attitudes towards condom use.

Hypothesis 11. The level of perceived behavioral control for condom use will differ by stage of change: participants in more advanced stages of change for condom use will perceive higher levels of control over condom use.

CHAPTER 3

METHODS

Design and Sample Recruitment

A quantitative, cross-sectional survey design was used in the present thesis study.

The study used a convenience sample of MSM recruited from a social networking website, a LGBT-oriented website and a LGBT-oriented newspaper (see Appendix A). While the use of these methods limited the study's generalizability, most research on sexual behavior uses convenience sampling (Miner et al., 2009) and this is particularly necessary when studying a marginalized population because there is no national list of MSM from which to sample randomly (Berg, 2008).

The social networking site, Facebook, was used to recruit participants. Facebook is the most used social networking site with 135 million unique site visitors monthly. Profiles on the site allow members to select who and what they are interested in finding via the site. A search feature on the site of all males in Iowa, over age 18 who indicated on their profiles that they were "interested in" men revealed that Facebook includes approximately 3,640 unique profiles. Though the focus of the site is on social networking, the site may be used for other purposes. A common theme among focus groups of young MSM at the AIDS Project of Central Iowa was the use of Facebook to meet sexual partners that is documented in an internal agency report (AIDS Project of Central Iowa, personal communication, April 12, 2009).

The second recruitment site was ACCESSline, Iowa's newspaper for lesbian, gay, bisexual, transgender and HIV positive community. The paper is distributed to 174 locations throughout the state and has 288 subscribers. The distributed number of copies per month is 4,600. With an estimated 2.2 readers per copy, the estimated readership is 10,120.

The third recruitment site was ACCESSline's website which receives an average of 2,100 visits per month and 4,500 page views. Additionally, an email blast, Twitter message and post on ACCESSline's Facebook page directed potential participants to the survey link. The email list contained 330 individuals, Twitter had 312 subscribers, and Facebook had 490 friends of ACCESSline's page.

The online survey program, Qualtrics, was used to administer the survey and collect participant data. Qualtrics is a technologically advanced and highly secure program that is available free to students at the University of Iowa.

The procedures for gaining access to potential participants varied by recruitment site. For Facebook, participants were recruited with a geo-targeted advertisement campaign. Advertisement bids were placed through a simple bidding system on the Facebook sales web page. When the highest bid was made for the day, the advertisement appeared as a small web banner on the right side of member profiles who met the specified target audience. The targeted audience was Facebook member profiles that selected "interested in men" on their profile, indicated that they were over age 18 and lived in Iowa or surrounding border cities. The advertisement contained an active link to the survey. Men were asked to click the advertisement to be taken to the survey web page. A set number of impressions, or times that the advertisement appeared, was allotted per bid. A new bid was placed for each day of the week.

For the ACCESSline website, banner ads were created to yield a set number of impressions per day during a one month period. If a person clicked on the ad, the person was automatically directed to the survey.

For the ACCESSline newspaper, a full page advertisement was displayed on the back page of the August 2011 edition of the paper. The ad read, "Take the Midwest Men's Sex Survey. Tell us about your sexual practices and attitudes! Conducted by researchers at the University of Iowa. Compensation will be provided". Readers were asked to enter the URL included in the ad into their web browser. The URL used for the

print advertisement was concise instead of a lengthy mix of letters and numbers that is given by the survey program Qualtrics. The concise link was www.healthyiowamen.org/survey. The link redirected potential participants to the survey at Qualtrics.com.

In addition to the paper advertisement, Arthur Breur, Editor-in-Chief of ACCESSline, mentioned the survey on ACCESSline's Facebook page when the August edition of the paper was sent to distribution sites. Furthermore, he sent an email blast and Twitter announcement to ACCESSline readers whose addresses or account names had been provided. The email list and account name list were not provided to the researcher. Brief text was provided to him to use in these announcements. The concise link to the survey was used for the announcements sent by Mr. Breur.

Selection criteria were necessary for purposes of the study. The sample recruitment was restricted to men who have sex with men and live in Iowa or surrounding border cities (e.g. Omaha, Rock Island). For the survey, eligibility criteria were being male or male-to-female transgender, being over the age of 18, and engaging in anal sex with one or more male partners within the last 12 months.

The theoretical sample size of possible study participants was approximately 10,000 based on the estimated target audience for Facebook ads and the number of MSM who may be exposed to the ACCESSline newspaper or website. The theoretical sample size may have included those who did not meet the aforementioned selection criteria for study participation.

Sample Description

In regard to demographic characteristics, it was expected that the majority of the sample would identify their sexual orientation as gay. Approximately two-thirds of the sample would reside in urban areas and would indicate an age from 18-30. Similar to the racial demographics of Iowa the sample was expected to be predominantly white (Census Bureau, 2008). Additionally, most of the men were expected to list their serostatus as

HIV negative. The majority of respondents was anticipated to have completed at least some college education and have been living above the median income for Iowa.

Data Collection Procedures

When potential participants arrived at the survey site, the first page presented an introductory statement that invited the individual to complete the survey (see Appendix B). The statement gave a brief description of the content, explained that the information would be kept confidential, gave the estimated length of time needed to complete the survey, and mentioned the possibility of compensation. Finally, tips for taking the survey were provided.

Per the selection criteria, prospective participants were asked three questions. Below the introductory statement, the first eligibility question appeared. Potential participants were asked to report their sex. On the second page, they were asked to report their age. On the third page, participants were asked to report if they had had anal sex within the past 12 months with men only, women only, both men and women or no anal sex within the past 12 months. If the individual met the three selection criteria, the individual was directed to the informed consent page (see Appendix C). If the person was ineligible, the individual was taken to the end of survey page that thanked the person for his or her time. A link was provided so that individuals could give their email addresses in order to enter the drawing for a chance to receive compensation. Also, a link was provided so that participants could enter their email address to receive a summary of the study's findings when they were available. Lastly, links to resources were provided about nearby HIV and STD testing sites, where to seek help if in crisis, as well as information on mental health, sexual orientation, and LGBT health.

Eligible participants were taken to the following screen that contained the consent letter. Eligible participants were asked to read through the information and click on "Yes, I agree" if they agreed to the information. A link to the consent letter was provided so

that participants could save and/or print a copy for their records. If the man clicked “No, I do not agree”, he was taken to the end of survey page that thanked him for his time and provided the same list of links and resources.

If the eligible participant indicated agreement, he was taken to the first page of the survey and clicked “Next” at the bottom of each page to advance to subsequent pages of the survey instrument. When participants reached the final page of the survey, the survey was automatically submitted. A message was displayed that let participants know that their responses had been received and were being recorded. Time to complete the survey was approximately 15-20 minutes. After submitting the survey, he was taken to the end of survey page that thanked him for his time and provided the list of links and resources.

The consent form explained that participants may choose to be entered into a drawing after the survey was submitted. The survey did not have to be completed entirely in order to participate in the drawing. Participants elected if they wished to be a part of the drawing; there was no default process by which their name was submitted. If participants chose to be entered into the drawing, they clicked on the link provided on the screen when the survey was submitted in order to be directed to a separate, secure survey page that asked the participant to enter a valid email address and reenter the email address to confirm. A statement appeared on the screen that explained that their email address and any personal information would not be able to be linked to their survey responses. However, complete anonymity would be compromised if an email were provided since the email would demonstrate that the person had participated in the survey.

Twenty gift cards in the amount of $20 were used as compensation to participants who were randomly selected as winners. If a survey participant was selected to receive one of the gift cards, the researcher contacted the participant at the email address provided. A code to use at Amazon.com was provided in the email message. The participant was completely free to use the money on any item available for purchase on

the site. Funding for the compensation to participants was provided by the AIDS Project of Central Iowa. The funding source was disclosed to participants in the consent information.

Human Subjects

In addition to potential compensation through the drawing, there were no direct benefits to participants in completing the survey. Though potential risks were minimal, psychological distress may have been a risk for participants. For instance, completion of the survey may have caused a participant to consider past sexual risk behavior which may have led to questions about his HIV status. Additionally, a participant may have previously experienced sexual trauma or a recent incident in which sexual relations were not consensual. In this case, responding to questions about recent sexual behavior may have increased negative feelings about the traumatic experience. Lastly, a participant may have been questioning his sexual identity or have had a greater degree of homonegativity. In these instances, responding to questions about male to male sexual contact may have raised awareness about sexual identity or shame about their sexual behavior. The man may have had difficulty coping with these feelings.

Risk may been associated with the electronic format of the survey as well. If the participant completed the survey in a public area, other people may have been able to view the participant's survey questions and responses. Additionally, though steps were taken to ensure confidentiality, confidentiality could not be guaranteed when information was shared via the Internet. These concerns would have been especially important for participants who were not open about their sexual identity or sexual practices with men. Furthermore, participants' IP addresses were collected by the Qualtrics program which was an identifiable piece of information. Lastly, if participants chose to click on the link to enter the drawing or to request the summary of the results from the present thesis study, they were asked to provide their email address. The email address was information that may identify participants as well.

Several steps were taken to protect participants. First, potential research participants were informed that they could choose not to complete the survey during the consent process by clicking “No, I do not agree” after viewing the consent document.

Second, participants were informed during the consent process as well as reminded at key points while completing the survey that they could stop at any time. Furthermore, participants were informed in the consent process as well as reminded at key points while completing the survey that they could skip any questions they did not feel comfortable answering or they could resume completion of the survey at a later time. Third, identifiable information other than IP address was not obtained from participants in an effort to ensure anonymity. If respondents provided an email address in order to be included in the drawing for possible compensation, the email addresses were kept confidential by the researcher in a password-protected file. Data were destroyed upon completion of the data analyses for the thesis. Additionally, all findings from the study were presented in aggregate form so that no specific participant information could be identified.

Resource information was provided to participants. The last page of the survey, or the point at which the participant declined to complete the survey, included sexual health resources so that participants who had questions about their sexual health could contact knowledgeable staff. Also, mental health resources were given in the event that participants experienced psychological distress related to sexuality, trauma or other mental health issues and desired to speak to a mental health professional. National hotlines for mental health and suicide were provided to ensure that participants who would feel uncomfortable contacting resources within the state, especially those in rural areas of Iowa, could still seek help if necessary.

Lastly, participants were not required to enter an email address. They had to click on a separate link and enter their email address in order to participate in the drawing. Participants were reminded on the drawing entry page that an email address is identifying

information and should only be entered if they wished to provide the information to be contacted for purposes of the drawing if they were randomly selected to receive compensation. Participants also were reminded that the email address they provided was in no way connected to the responses provided in the survey. Additionally, the email addresses was provided through the secure server provided by Qualtrics and the addresses were kept on a password-protected computer to which only the researcher had access. Email addresses were deleted from the computer when the 20 randomly selected participants who will receive the $20 compensation gift cards had been notified. No type of follow-up or long-term contact occurred beyond notification to randomly selected participants.

Pilot Test

An original draft of the survey was reviewed by three AIDS Project staff members who are MSM and work extensively with the MSM community in central Iowa. The staff members offered feedback regarding the wording of demographic items. For example, the response option for sexual orientation was changed from "homosexual" to include the word "gay". Two items from the set of questions regarding norms originally referred to "men I'd like to have sex with". The staff members felt this was confusing and did not measure what was intended. They recommended changing the wording to "potential sex partners" so that the term clearly referred to those one had the potential of having sex with in the future in contrast to partners who would most likely be inaccessible such as famous persons.

Following changes based on the input of staff members, a survey of MSM focus group members was used to get input from MSM in the community. In order to measure normative beliefs, behavioral beliefs and control beliefs, an elicitation study should be conducted first. The elicitation study allows the researcher to ensure that beliefs are salient to the study's participants (Francis et al., 2004). Past sexual behavior studies using the TPB have conducted elicitation studies (White, 2004; Jamner, Wolitski, Corby,

& Fishbein, 1998; and some have not (Miner et al., 2009; Kok et al., 2007; Cochran & Mays, 1992). The studies that did not conduct an elicitation study reported a reliance on past observations or research on the population of study. Across the studies, only slight differences were noted in the questions that appeared on the questionnaires from the studies with elicitation compared to those studies that did not include an elicitation study. The similarity held across studies using different high risk groups.

For the present thesis study, an elicitation study was not feasible. To measure control beliefs, a standardized condom self-efficacy scale was used (see Chapter 2 for a discussion). For normative and behavioral beliefs, the researcher relied on past studies to compile beliefs that were commonly used in TPB studies of condom use. Using the compilation, three MSM staff members at the AIDS Project of Central Iowa, all with at least three years of experience working with MSM through outreach and HIV testing were asked to review the compilation and provide feedback. In addition, they were asked to suggest other items they felt were important that were not included on the list. Subsequently, a list with suggested additions was handed to the staff and they were asked to rank the items on the list in order of which beliefs they believed to be most common for Iowa MSM.

After making the changes recommended by staff members, a brief survey was created to use with a focus group of MSM at the AIDS Project of Central Iowa. The focus group was conducted for development of a new program; however, the brief surveys were able to be distributed at the beginning of the session. Members included 10 men who ranged in age from 22 to 45. The surveys included the list of items chosen by the staff members for pros and cons of condom use. The instructions asked the focus group members to pick the five pros and the five cons for condom use that seemed most important to them for casual partner. A separate column was included to select the top five pros and top five cons for main partners. The next question listed five referent groups which included gay or bisexual men, friends, potential sex partners, family, and

health care providers. Two "other" spaces were added to write in responses. The instructions asked focus group members to rank the individuals or groups in order of importance for approval/disapproval of condom use with casual partners and separately for main partners. The last question listed out the condom use self-efficacy items and included a column for casual and for main partners. The instructions asked focus group members to choose the top five circumstances or factors that seemed most important to them for casual and for main partners. Two "other" options were added at the bottom of the list for respondents to write in responses.

Responses to columns regarding casual and main partners for the pros and cons questions and self-efficacy items were tallied. The four pros and four cons for casual partners and the four pros and four cons for main partners that received the greatest number of votes were selected as the items to measure pros and cons in the final survey. The thirteen items that received the most votes for the casual partner column and separately for the main partner column were selected as the items to use to measure condom use self-efficacy in the final survey. For the norm question, the referent group rankings were compiled and added for casual and main partner columns. The three referent groups with the highest ranking, or greatest importance, were selected as the referent groups for casual partners and for main partners.

The aforementioned focus group input was incorporated into the survey design. Following this, the survey link in Qualtrics was sent out via email or Facebook to 14 MSM who were friends or acquaintances of the researcher and lived outside of Iowa or bordering cities. The individuals were asked to take approximately a half hour of their time to complete the survey and provide feedback by email or a message through Facebook regarding the format, content, any questions that were confusing or offensive, and the length of time to complete the survey. Six individuals completed the survey and provided feedback.

The survey took approximately 15-20 minutes to complete, although one person noted that the survey took him much longer due to taking the survey while working on other tasks. Respondents felt the survey had a very professional look and was easy to navigate. One person suggested using a different color scheme as the grayscale was hard to read. After obtaining input from an AIDS Project of Central Iowa staff member with extensive experience in web design, the color scheme was changed to blue with white lettering to add contrast and a calming effect. Also, the size of the font was reported to be too small. With this, the font size was increased from 12 to 14.

The original introductory statement on the first page of the survey referenced an Emory University survey that recently had been conducted in Iowa. Respondents stated that this reference was confusing and including the statement would not impact whether or not participants completed the survey. In response, the reference to the Emory University survey was removed.

Originally, the eligibility question regarding anal sex included the time frame of three months. One respondent shared that he was glad the survey referred to a three month period because he believed he would have a difficult time remembering sexual events before that period. However, an individual who attempted to take the survey was considered ineligible since he had not had anal sex within the last three months, but had engaged in sex within the past 12 months. In response to this, the researcher reviewed recent literature and found studies that used a three month time frame to minimize recall bias (Miner et al., 2009; Horvath et al., 2008) as well as some that used a six month period (Kok et al., 2007) and a 12 month time frame (Kakietek et al., 2011; Sullivan et al., 2009). Based on these findings, and given the potential of a sizeable percentage of MSM respondents being deemed ineligible, as well as the resulting lower number of completed surveys, the researcher changed all language in the survey to refer to the last 12 months instead of the last three months.

Finally, general comments were received from two respondents that some of the questions on the survey were hard to answer. One respondent commented that some items did not lend themselves well to Likert-type response categories, but he believed there was no other way to ask this information given the survey design. The respondents did not give feedback specific to certain items in particular, thus no changes were made.

Instrument

The survey contained eight sections, including two sections for all participants: 1) demographics, 2) anal sex behavior in last 12 months and strategies to reduce risk, and seven sections by partner type: 3) stages of change for condom use, 4) normative beliefs and norms for condom use, 5) behavioral beliefs (pros and cons) and attitudes towards condom use, 6) condom use self-efficacy (control beliefs) and perceived behavioral control over condom use, 7) intentions to use condoms at next sex, and 8) action planning for condom use. If the participant had a main partner only or casual partners only, the survey contained a total of 100 items. If the participant had both main and casual partners, the survey contained a total of 159 items.

For the sets of items that asked about participants' main and casual partners in the last 12 months, the conditional branch logic of Qualtrics was used so that the sets of items would appear based on whether the participant had main partners, casual partners, or both partner types. If a participant had only casual or only main partners, only that set of items would appear for them to complete. Additionally, randomization of the sets of items about casual and main partners was used. Thus, for participants who had both main and casual partners, Qualtrics was programmed to randomly display either the main partner set of items or the casual partner set of items first. Lastly, when possible, items were randomized within a set of items used to measure each variable to control for ordering effects. Items to measure the following variables were randomly presented within the set of items: websites or applications used to look for sex, alternative strategies to condom use, attitudes towards condom use, pros and cons for condom use,

subjective norms for condom use, perceived behavioral control over condom use, condom use self-efficacy, and action planning for condom use.

Variables and Measures

Demographics

To begin, participants completed three eligibility questions that asked for their sex, age in years, whether they had anal sex in the last 12 months with men, women, both men and women, or did not have anal sex in the last 12 months. Participants were eligible if they were male or male-to-female transgender, over 18 years old, and reported anal sex in the last 12 months with men or both women and men. If eligible, participants who consented to the survey responded to ethnicity and race items. Next, participants were asked to report their zip code to measure geographic location in Iowa. The following question asked about the size of the community in which the participant lived as an indicator of the rurality or urbanicity of the residential area. Following these questions, the questions asked for highest grade of education completed and income range. Information on income and education may impact the generalizability of the sample. Research suggests that those at lower education and income levels may be at greater risk of HIV (CDC, 2010). Sexual orientation was measured by asking participants how they identified themselves with the response categories of heterosexual or "straight", homosexual or "gay", bisexual and other. Preferred sexual position was measured next by asking the participant to select (1) "top" or insertive partner, (2) top/versatile, (3) versatile in which the partner prefers both insertive and receptive equally, (4) versatile/bottom, and (5) "bottom" or receptive partner. This question was necessary due to differences in HIV risk (CDC, 2005). Receptive partners are at a significantly higher risk of contracting HIV compared to insertive partners. Serostatus was measured by asking participants if they were HIV negative, HIV positive or didn't know. Extant literature reports differences in risk behaviors including reported condom

use, substance use and sexual compulsivity by serostatus (Sanchez et al., 2006; Miner et al., 2009).

The final three demographic items were included in order to gain descriptive information about romantic partner-seeking and Internet sex-seeking behavior and was not included in the multivariate model for the present thesis study. Romantic partner seeking was measured due to a recent study's finding that high levels of romantic partner-seeking online and high levels of Internet sex-seeking were related to higher levels of unprotected sex among young MSM (Bauermeister, Leslie-Santana, Johns, Pingel, & Eisenberg, 2011). Additionally, inclusion of the variable acknowledged that MSM are online for purposes other than finding sex acknowledged their desire for relationships beyond sex. Romantic partner-seeking was measured with a single item that asked the number of hours per day on average over the past seven days the respondent spent actively looking for potential romantic partners.

For the Internet sex-seeking variable, Rosser et al. (2009) argued that inclusion of items regarding Internet use and sex-seeking help researchers to understand what MSM are doing online and appropriately tailor interventions based on the information gathered. Participants were asked about the number of hours spent seeking sex online in the last week. The last item in the demographic section asked participants to select the websites visited to seek sex in the last 12 months. Several options were listed including Manhunt, Gay.com, Adam4Adam, and Craig's List. An "other, please specify" option was added for participants to indicate additional websites.

As exploratory descriptive variables, other risk reduction strategies items were included to measure what alternative methods MSM were using in an attempt to reduce risk of acquiring HIV in addition to or instead of condom use. The item advised respondents that though condom use was the effective way to reduce risk of HIV, some men may use other strategies to try to reduce risk during anal sex besides condoms. Participants were asked to respond to each strategy by indicating their level of use of the

strategy within the last 12 months. The strategy options included serosorting, which a few studies have measured and found to be used as a risk reduction strategy by a significant minority of MSM (Hopkins & Reitmeijer, 2007). In addition, other strategies such as limiting the number of anal sex partners, using withdrawal prior to ejaculation, avoiding douching prior to being the receptive partner (bottom), establishing trust with (getting to know) partners before engaging in sex, only engaging in oral sex, and only engaging in unprotected anal sex as the insertive partner. Two "other, please specify" options were added for additional strategies to be written in by participants.

Dependent Variable

To answer the research questions and hypotheses related to the Theory of Planned Behavior, intentions were used. Intention is a proximal measure of behavior that refers to the whether an individual expects or wants to engage in a behavior in the future (Francis et al., 2004). Intentions to use condoms during next sexual encounter with main partner and intentions to use condoms at next sexual encounter with casual partner were measured with four items based on Ajzen and Fishbein's (1980) guidelines for item creation that use an item stem followed by a statement about the specific behavior. Item stems used in the present thesis study were developed and used in prior investigations involving the Theory of Planned Behavior and intentions to complete high school (Saunders, Davis, Williams & Williams, 2004; Davis, Ajzen, Saunders, & Williams, 2002). To create items, the target behavior of high school completion was replaced with use of condoms for anal sex. The items included, "I'm determined to use a condom the next time I have anal sex with a main partner"," I expect to use a condom the next time I have anal sex with a main partner", "I intend to use a condom the next time I have anal sex with a main partner" and a reverse-coded item that stated, "It's possible I might not use a condom the next time I have anal sex with a main partner". The response categories were along a seven point Likert scale from *strongly disagree* to *strongly agree*. For the present thesis study, Cronbach's alpha for the main partner intentions composite

was .95. An additional four items were used to measure intention to use condoms with casual partners. For the present thesis study, Cronbach's alpha for the casual partner intentions composite was .94. The items were the same except that "main partner" was changed to "casual partner".

Importantly, the measurement of intentions used in the present thesis study differs with what has been used most recently in Miner et al. (2009) and Kok et al. (2007) web-based surveys with MSM. They used one item to assess intentions. For example, in Miner et al. (2009) the questionnaire included an item that asked, "The next time you have sex with someone, how likely are you to bring up the need to practice safer sex?" While a commentary by Rosser et al. (2009) noted the importance of brevity in Internet surveys, the use of one item to assess intentions diverges from the instructions created by Ajzen and Fishbein (1980) which many studies have relied on to assess components of the TPB. Moreover, the use of one item raises questions about the measurement validity and reliability, especially given that both studies were cross-sectional designs.

Please see Table 1 for a summary of the variables and measures used to test the research hypotheses for the present thesis study.

Independent Variables

Normative Beliefs

Normative beliefs involve a perception of the social pressure to perform a behavior, or the extent to which important individuals or groups would approve or disapprove of behavioral performance. As part of the normative belief construct, motivation to comply is measured. Motivation to comply refers to the importance an individual places on acting in accordance with the perceived social pressure (Ajzen, 1991).

Normative beliefs were measured by six items that covered normative beliefs and motivation to comply with each normative belief. Item stems used in the present thesis study were developed and used in prior investigations involving the Theory of Planned

Behavior and intentions to complete high school (Saunders, Davis, Williams & Williams, 2004; Davis, Ajzen, Saunders, & Williams, 2002). To create items, the target behavior of high school completion was replaced with use of condoms for anal sex. Items to measure norms focused on three referent groups that varied by partner type as identified from the focus group of MSM: (1) gay or bisexual men, (2) potential sex partners, and (3) the respondent's friends for the casual partners, and (1) friends, (2) potential sex partners, and (3) family for the main partners. For normative beliefs, items included "My friends think I should use a condom for anal sex with a casual partner". The response options were along a seven-point Likert scale from *strongly disagree* to *strongly agree*. Motivation to comply was measured with items such as "My friends' approval is important to me" with the same set of response options.

In order to create a composite, a product was composed by multiplying the values of the responses to the normative belief items by the values of each response to the motivation to comply item. For the present thesis study for main partners, the Cronbach's alpha of the composite was .84. For casual partners, the Cronbach's alpha value was .79.

Behavioral Beliefs

Behavioral beliefs are beliefs about the consequences of behavior. These consequences can either be positive or negative (Ajzen, 1991). Notably, the attitude measures of several recent studies based on the TPB seem to be measuring behavioral beliefs with no apparent justification (Kok et al., 2007; Gullette & Turner, 2004). However, earlier studies maintained a distinction between behavioral beliefs and attitudes (Cochran et al., 1992; Courneya, Nigg & Estabrooks, 1998). For the present thesis study, some items that had been used to measure attitudes, or pros and cons, were used in Kok et al. (2007) and Gullette and Turner (2004) because the items fit the operationalization of behavioral beliefs.

Eight items were used to measure behavioral beliefs. Four items were positive consequences and four items were negative consequences. All items completed the statement, "Using a condom for anal sex with my casual partner would..." Three of the behavioral belief items were the same for both casual and main partners and the other five varied by partner type. The three common items were two negative consequences, "make sex less intimate", "make sex less spontaneous" and a positive consequence, "protect from STDs". Casual partner items included "be a lot of trouble", "make me worry less". For main partners, items included "make my partner think I might 'play around'" and "be the responsible thing to do". The response categories were along a seven point Likert scale from *strongly disagree* to *strongly agree*. For the present thesis study, Cronbach's alpha for the composite for main partners was .79. For casual partners, the Cronbach's alpha value was .84.

Control Beliefs

Control beliefs are beliefs regarding one's ability to perform a behavior with respect to the individual's perception of the resources and opportunities that exist in order for him or her to successfully execute the performance. The control beliefs may be based on past experience, experiences of important others in an individual's life, and other factors that influence the perception of availability of resources and the possibility of opportunities to perform a behavior efficaciously. If more barriers are perceived by the individual, behavior may be more unlikely. The control beliefs lead to perceived behavioral control which is defined as a person's perception of the ability to perform a behavior in spite of barriers that make performance more difficult (Fishbein & Yzer, 2003).

Control beliefs were assessed by using a condom self- efficacy scale. Self-efficacy is defined similarly to control beliefs as the belief in one's ability to perform a behavior (Bandura, 1994). The scale had been used in past investigations involving unmarried Latino men, Latino gay and bisexual men and HIV positive MSM (Marin et

al., 1997; Miner et al., 2009). Individual interviews and several pretests were used in its creation along with factor analysis. Cronbach's alpha in past investigations has ranged from .88 to .95 (Marin et al., 1997; Miner et al., 2009). The operational definition used for the scale was "the perceived ability to overcome specific barriers that make a behavior more difficult" (Marin et al., 1997, p. 459). The Condom Use Self-Efficacy Scale includes 15 items that assess five dimensions of condom self-efficacy, namely regular partner, impulse control, partner resistance, STD thoughts and condom discussion (Marin et al., 1997). For the present thesis study, regular partner was referred to as main partner. These dimensions measure one's ability to use condoms across several different situations. Items to assess regular partner include "can you use a condom regularly even if the partner might think less of you" and "can you use a condom even if you are with a person you're in love with". Impulse control items include "can you stop and look for condoms when you are sexually aroused" and "can you put a condom on yourself without spoiling the mood". To assess partner resistance, items consist of "can you use a condom if a partner does not want to use one" and "can you continue to insist on using a condom with a person who gets angry when you suggest it". STD thought items contain "can you use a condom even when someone says they have no infectious diseases". Condom discussion includes "can you discuss condom use with any sexual partner you might have".

Based on the responses of focus group members, one item was different for casual partners and for main partners. For casual partners, "can you insist on condom use when the person you are with appears clean and decent" was used. For main partners, this item was replaced with a different item from the regular partner dimension, "can you use a condom with a long-time partner". Additionally, based on focus group survey input, one partner resistance item ("can you continue to insist on using a condom with a person who threatens to leave if you use it") and one STD thoughts item "can you use a condom whenever you're with a person who seems 'fast''' were removed in order to limit the

number of total items on the survey. The response options were along a five-point Likert scale from *definitely not* to *definitely yes*. Notably, the middle response category was not accessible in a publication in the public domain. Therefore, *uncertain* was chosen as the neutral response category after consultation with the researcher's thesis advisor. For the present thesis study, Cronbach's alpha for the composite for main partners was .96. For casual partners, the Cronbach's alpha value was .97.

Subjective Norms

Subjective norms refer to the perceptions about what important others think. Subjective norms are a more general measure that does not ask separate questions by referent persons or groups (Francis et al., 2004). Four items were used to measure this construct for main and for casual partners. Item stems used in the present thesis study were developed and used in prior investigations involving the Theory of Planned Behavior and intentions to complete high school (Saunders et al., 2004; Davis et al., 2002). To create items, the target behavior of high school completion was replaced with use of condoms for anal sex. Questions for casual partners and main partners were the same except that the term was changed for partner type. Items included "Most people who are important to me think I should use condoms for anal sex with a casual partner" and "Most people who are important to me expect me to use a condom for anal sex with a casual partner". The response categories ranged from *strongly disagree* to *strongly agree* along a seven point Likert scale. For the present thesis study, Cronbach's alpha for the composite for main partners was .89. For casual partners, the Cronbach's alpha value was .79.

Social Norms

In addition to subjective norms, social norms were measured. Social norms refer to an individual's perceptions of important others' performance of a behavior (Miner et al., 2009). Social norms are not one of the antecedents for the TPB, but are included as an additional measure of norms in many TPB studies (Miner et al., 2009; Kok et al.,

2007; Marin et al., 1997). Item stems used in the present thesis study were developed and used in prior investigations involving the Theory of Planned Behavior and intentions to complete high school (Saunders et al., 2004; Davis et al., 2002). To create items, the target behavior of high school completion was replaced with use of condoms for anal sex. Three items measured social norms for casual partners and two items measured social norms for main partners. For main partners, one of the selected referent groups from focus group participants was family. Given the construction of the items that would involve asking about family members' anal sex behavior, the item was excluded from the survey due to its inappropriateness. Examples include "most of my friends use a condom for anal sex with a main partner" and "most of my potential sex partners use a condom for anal sex with a casual partner". The response categories ranged from *strongly disagree* to *strongly agree* along a seven-point Likert scale. For the present thesis study for the casual partners composite, the Cronbach's alpha value was .88.

Attitudes

Attitudes are an evaluation of the positive and negative consequences of a behavior (Ajzen, 1991). Following a fundamental measure of attitudes in social psychology, a semantic differential is used to measure attitudes and the corresponding valence (Courneya et al., 1998). As mentioned in regard to behavioral beliefs, this measurement of attitudes differs from what has been used in some recent studies of the TPB components with a sample of MSM (Kok et al., 2007) though not all (Hopkins & Rietmeijer, 2007).

For the present thesis study, five items were used to measure attitudes along a seven-point semantic differential scale. Items were the same for both casual and main partners, except that casual was replaced with main. Respondents were asked to rate "using condoms with my casual partner(s) is:" along five dimensions. The dimensions *good/bad, wise/foolish, easy/difficult, pleasant/unpleasant, beneficial/harmful* were used. These dimensions were chosen based on use in previous studies of condom use (Hopkins

& Rietmeijer, 2007; Jamner et al., 1998; Cochran et al., 1992) and consultation with three AIDS Project staff members about appropriate dimensions to measure. For the present thesis study, Cronbach's alpha for the composite for main partners was .83. For casual partners, the Cronbach's alpha value was .83.

Perceived Behavioral Control

Perceived behavioral control measures an individual's perceptions of the amount of control he or she has to perform a behavior in spite of barriers that may exist. Addressing one's perceived sense of control is especially important in investigations of sexual behavior, where perceptions of control may vary based on the relationship dynamics with the sexual partner (Svenson et al., 2002). Perceived behavioral control was measured by four items for each partner type. Item stems used in the present thesis study were developed and used in prior investigations involving the Theory of Planned Behavior and intentions to complete high school (Saunders et al., 2004; Davis et al., 2002). To create items, the target behavior of high school completion was replaced with use of condoms for anal sex. The response categories were along a seven point Likert scale from *strongly disagree* to *strongly agree*. Examples of items include "for me to use a condom for anal sex with a main partner will be difficult" and "I can overcome any obstacles or problems that could prevent me from using a condom with a casual partner if I want to". For the present thesis study, Cronbach's alpha for the composite for main partners was .63 . For casual partners, the Cronbach's alpha value was .66.

Action Planning

In the present thesis study, for multivariate analyses related to Hypothesis 8, action planning also will function as a dependent variable. Action planning was measured by an 11 item scale created by Abraham et al. (1999) as a test of Schwarzer's Health Action Process Approach. The definition from the model is the subjective appraisal of one's level of planning (Schwarzer, 1992). The original Action-specific Planning Scale asks participants, "To what extent had you planned or thought about each

of the following?" with three responses categories, namely "had a clear plan about this", "had given this some thought" and "had not thought about this".

Modifications were necessary for the present study to ensure low rates of random error and ensure differentiation in the ordinal-level response set. All but one other measures for independent variables used the response set *strongly disagree* to *strongly agree* along a seven-point Likert scale. A change in the response set may have led to confusion for participants. Also, the three response options in the original instrument do not appear to be equally and clearly spaced along a continuum of response options. Given that no validation studies have been completed on the instrument and the instrument only has been used with heterosexual college students, the researcher had minimal concerns about the impact to validity and reliability with the changes. Based on these factors, the wording was changed to "I have a clear plan about…" with a response set of *strongly disagree* to *strongly agree*.

Abraham and colleagues subjected all scale items to a factor analysis that revealed four factors related to planning of preparatory actions for condom use. Cronbach's alpha for each of the factors ranged from .73 to .86 (Abraham et al., 1999). The factors were acquisition planning, suggestion planning, negotiation planning and planning in relation to the social management of putting on a condom. Acquisition planning was measured by items like "where to get condoms during the day" and "where to get condoms during the evening". Suggestion planning items included "when to bring up the issue of condom use with a new partner" and "a good way of suggesting using a condom to a new partner". Negotiation planning was measured by items like "what you would say if a partner was reluctant to use a condom" and "that you would not have anal intercourse unless a new partner agreed to use a condom". Planning in relation to the social management of putting on a condom items included "whether you or your new sexual partner would put the condom on the penis" and "at what point a condom would be put on". The items remained consistent with the original scale and were the same for both

casual and main partners. However, all references to “new partner” or “new sexual partner” were changed to either “casual partner” or “main partner”. For the present thesis study, Cronbach’s alpha for the composite for main partners was .97. For casual partners, the Cronbach’s alpha value was .97.

Stages of Change

Stages of change for condom use were measured by a three question algorithm that is commonly used to assess staging of condom use (CDC, 1996). Based on the answer to the questions, MSM were categorized into one of the five stages, precontemplation, contemplation, preparation, action, maintenance. The first question was modified to qualify whether sex was with a main or casual partner. The question asked “How often do you use a condom when you have anal sex with a main partner?” Response options were *every time, almost always, sometimes, almost never, never*. If the participant answered *every time* the next question asked, “How long have you been using a condom every time you have anal sex with a main partner?” with the response options of *6 months or more* and *less than 6 months*. If the participant answered *6 months or more,* he was classified in the maintenance stage and if *less than 6 months* he was classified in the action stage. If the participant answered *almost always* or *sometimes* to question one, then the follow up question was “How likely is it that in the next 6 months you will start using a condom every time you have anal sex with a main partner?” The response options were *very likely, somewhat likely, somewhat unlikely*, and *very unlikely*. Based on the responses, the participants were classified in preparation for the responses *very likely* or *somewhat likely,* and contemplation for *somewhat unlikely* or *very unlikely*. If the participant answered *almost never* or *never* to question one, then the follow up question was “How likely is it that in the next 6 months you will start using a condom every time you have anal sex with a main partner?” The response options were *very likely, somewhat likely, somewhat unlikely*, and *very unlikely*. Based on the responses, the participants were classified in contemplation for the responses *very likely* or

somewhat likely, and precontemplation for *somewhat unlikely* or *very unlikely*. Participants answered the based on the types of partners they have had in the past 12 months. If a respondent only had a main partner, he completed the questions for main partners. If a respondent only had casual partners, he completed the questions for casual partners.

Table 1. Measures for Main and Casual Partner Variables

Variable	*Hypothesis*	*Number of items*	*Cronbach's Alpha*		*Randomization of items*
			Main	*Casual*	
Normative beliefs	1	6	.84	.79	no
Behavioral beliefs	2	8	.79	.84	yes
Self-efficacy	3	13	.96	.97	yes
Subjective norms	1,4,7,9	4	.89	.79	yes
Social norms		3*		.88	no
Attitudes	2,5,7,10	5	.83	.83	yes
Perceived behavioral control	3,6,7,11	4	.63	.66	yes
Intentions	4,5,6,7,8	4	.95	.94	no
Action planning	8	11	.97	.97	yes
Stages of change	9,10,11	3			no

*For main partner, 2 items

Data Analysis

To begin, composite measures were created for all study variables. Therefore, all analyses involved study variables at the scale level of measurement.

In order to answer the first research question, a correlation matrix was completed to examine the relationships between behavioral beliefs, normative beliefs and control beliefs with subjective norms, attitudes and perceived behavioral control.
Two correlation matrices were completed to investigate the relationships among subjective norms, attitudes and perceived behavioral control for main partners and casual partners. If correlations between any two variables were close to the absolute value of 1, only one of the variables was included in subsequent analyses because of the multi-collinearity.

In order to answer the second research question, two sets of analyses were completed. The first analyses addressed hypotheses 4, 5, and 6. Pearson's correlations were used to examine the linear relationship between attitudes and intentions, subjective norms and intentions, and perceived behavioral control and intentions. To complete the partial test of the TPB for main and casual partner types, hierarchical regression analyses were conducted. Two analyses were conducted separately with *intentions to use condoms during next sexual encounter with main partner* as the outcome variable in the first analysis and *intentions to use condoms during next sexual encounter with casual partner* as the outcome variable in the second analysis. For both analyses, control variables were entered in the first step. The control variables included demographic variables that have been controlled in analyses of previous studies of MSM and sexual risk behavior or variables found to be significantly related to sexual risk behavior in past studies, namely age (Horvath et al., 2008), race/ethnicity (Prejean et al., 2011), education (Miner et al., 2009; Kok et al., 2007), serostatus (Sanchez et al., 2006) and geographic location (Horvath et al., 2006). Prior to entering the control variables, initial regression analyses were conducted with all of the potential control variables. Only variables that

were significant predictors of intentions to use condoms during next sexual encounter with main and with casual partners were included in order to minimize the number of variables added to the regression model. The use of this technique followed the analysis of Kok et al. (2007). In the second step, the three antecedent variables from the TPB were entered, e.g. subjective norms, attitudes and perceived behavioral control, to examine the unique contribution of each of the variables. The third step included the addition of all distal factors, e.g. pros and cons, self-efficacy, normative beliefs, and social norms. The data analysis procedure following these steps adheres to previous studies based on the TPB (Miner et al., 2009; Kok et al., 2007). Furthermore, in the first analysis, the three antecedent variables for main partners were entered in the second step and distal factors on the third step. In the second analysis, the three antecedent variables for casual partners were entered in the second step and distal factors on the third step. The data analysis procedure by partner type followed the procedures of Jamner et al. (1998).

In order to address the third research question, the relationship between intentions to use condoms during next sexual encounter and action planning for condom use was examined for main partners and for casual partners separately. Pearson's correlation coefficients were calculated for both partner types. If a significant relationship existed between intentions and action planning, a simple linear regression was completed to examine whether intentions are a significant predictor of action planning. For exploratory purposes, additional regression analyses were completed with action planning as the dependent variable. Following the proposed model of the relationship between TPB components and action planning, intentions was entered in the first step. On the second step, the three antecedents were entered. On the third step, all other distal factors were entered. The analysis was completed separately for casual partner and main partner variables.

In order to test the exploratory research hypotheses, three analyses using Spearman's rho were completed to assess the relationship between attitudes and stages of change, subjective norms and stages of change, and perceived behavioral control and stages of change. These analyses were completed separately for those who reported a main partner and those who reported a casual partner.

Power Analysis

A power analysis was conducted to determine the approximate number of participants needed in order to analyze the study data. According to Cohen and Cohen (1983), 84 cases would be needed for adequate power based on the parameters. Approximately 10 cases are needed for each independent variable entered into the regression model. With a total of four variables, 40 participants will be needed for the analysis of the variables related to condom use with main partner and 40 will be needed for the analysis of the variables related to condom use with casual partners.

CHAPTER 4

RESULTS

Usage Statistics

Usage statistics are important indicators of sample recruitment for online surveys and researchers suggest uniform reporting of these numbers to allow comparisons across studies (Pequegnat et al., 2007). For ACCESSline's web site, usage statistics are tracked by Google Analytics. During August, 2011 when data collection occurred, there were 2,128 visits to the site and 4,709 page views. There were 4,795 recorded impressions, or number of times the ads were displayed to viewers, on the site. A total of 35 ad clicks were documented, for a 0.73% click-thru rate (CTR), suggesting that 35 individuals were directed to the survey and may have participated. The CTR is a measure of the percentage of times the ad is viewable by users that result in clicking on the link to be directed to the survey. For Facebook ads, statistics are tracked by Facebook's marketing team. The number of impressions displayed to users who met the selection criteria was 1,527,084 during the five week period in which ads appeared on the site. The ad impressions resulted in 799 clicks, for an average CTR of 0.52%.

Univariate Results

The final sample included a total of 268 respondents. The average age of respondents was 33 years (range 18 years to 71 years). Approximately 52% of the sample was 30 years of age or younger Most of the sample was White (89%) and approximately three percent were Black/African American and five percent Multi-racial. Respondents predominantly lived in urban settings with approximately 75 percent of participants residing in urban areas. Twenty-five percent resided in small cities or rural areas with only 8 percent having reported that they had more than 30 minutes of driving time from their residence to a larger city. Participants had a moderate level of education, with about half (48%) indicating some college or technical school and 24 percent had

obtained a bachelor's degree. For approximately three-fourths of participants, the annual income was under $40,000 with 41.5% reporting $20,000 or less and 33.8% reporting between $20,001 and $40,000. Ninety-five percent of the sample identified as gay or homosexual. The sexual position that participants most identified as showed the highest percentage of participants as bottom/versatile (30%) and top/versatile (22%). For HIV status, 81 percent of respondents indicated they were HIV negative, approximately nine percent were HIV positive and 10 percent did not know their current HIV status. Please see Table 2 for further demographic information regarding the sample.

Sexual Partners

The average number of anal sex partners for all participants in the last 12 months was 5.62 (SD=8.51). Approximately 30 percent of participants (n=68) indicated that they only had a main partner, 20 percent (n=46) indicated only a casual partner, while the majority of participants (49%, n=111) indicated that they currently had or had had both casual and main partners in the past 12 months. The median number of partners was three. One hundred seventy-six participants reported a main partner in the last 12 months. On average, participants reported one main partner in last 12 months and anal sex with these partners was unprotected. The mean length of relationship with a main partner was approximately 4 years (M=3.96, SD=5.35). For casual partners, 156 reported at least one casual partner in the last 12 months. Participants reported approximately a mean of 4 casual partners in the last 12 months (M=4.15, SD=6.9). On average, anal sex with these partners included unprotected anal sex with 3 of these partners (M=2.81, SD=4.6). Thus, on average, condoms were not generally used for anal sex with main partners or for casual partners, although respondents reported that condoms were used with at least some casual partners. Please see Table 3 for the sex partner characteristics of the sample.

Table 2. Participant Characteristics for Total Sample (N=268)

	N	%(n)	Mean	SD	Range
Age	268		33.98	12.87	18-71
Race	268				
Asian/Pacific Islander		1.5%(4)			
Black/African American		3.4% (9)			
White		89.2% (239)			
Multi-racial		5.2% (14)			
Other		.7% (2)			
Ethnicity	266				
Hispanic/Latino		4.9% (13)			
City Size	267				
Rural area/small town		11.6% (31)			
Small city		13.5% (36)			
Larger city		74.9% (200)			
Education	262				
Graduate/Professional		11.5% (30)			
Bachelor's		24.4% (64)			
Some college/ technical school		48.1% (126)			
High school/GED		13.4% (35)			
Some high school or less		2.7% (7)			
Income	263				
$20,000 and less		41.5% (109)			
$20,001 to $40,000		33.8% (89)			
$40,001 to $60,000		12.5% (33)			
More than $60,000		12.2% (32)			
Sexual Orientation	261				
Heterosexual/Straight		.4% (1)			
Gay/Homosexual		95.4% (249)			
Bisexual		4.2% (11)			
Sexual Position Identity					
Top		13.7% (36)			
Top/Versatile		22.4% (59)			
Versatile		18.6% (49)			
Bottom		29.7% (78)			
Bottom/Versatile		15.6% (41)			

Table 2 continued

HIV Status	263	
HIV Negative		81.4% (214)
HIV Positive		8.7% (23)
Don't know		9.9% (26)

Participants reported the average number of hours spent online in the last 7 days seeking potential romantic partners and seeking sexual partners. For participants reporting the average number of hours seeking potential romantic partners (n=250), the mean number of hours in the last week was 2.81 (SD=4.69). Of the substantially lower number of participants who reported the average number of hours seeking sex online (n=118), the mean number of hours in the last week was 2.19 (SD=4.60). Additionally, respondents answered questions regarding the sites or phone applications they had visited within the last 12 months to look for sex with other men. The most common sites or applications that respondents used were Manhunt (40.3%), Craigslist (36.1%), and Adam4Adam (26.6%). Facebook was used by 25.1% of respondents and 25.1% of respondents reported that they did not use the Internet to look for sex.

Use of alcohol and use of other substances during anal sex was assessed. Approximately 57% of participants indicated that they had had anal sex while drunk within the past 12 months. For drug use, 32% of the sample reported using drugs during anal sex in the past 12 months. Of those reporting drug use during anal sex, 67.6% (n=50) used marijuana, 55.4% (n=41) used poppers (amyl nitrates) during sex, 24.3% (n=18) used erection-enhancing drugs (i.e. Viagra), and 20.3% (n=15) used prescription pain killers. Methamphetamine use was reported by 10.8% (n=8) and ecstasy use by 8.1% (n=6). Three or less participants (4% or less) reported use of GHB (gamma hydroxybutyrate), Special K (ketamine), cocaine, or heroin.

Table 3. Anal Sex Partner Characteristics for Total Sample (N=247)

	N	Mean	SD	Median	Range
Anal sex partners	247	5.62	8.51	3	0-75
Main partners	227	1.05	.82	1	0-5
Unprotected with main	176	1.43	2.36	1	0-20
Length of relationship in years	176	3.96	5.35	2	0-28
Casual partners	226	4.15	6.90	2	0-55
Unprotected with casual	156	2.81	4.60	1	0-20

Study Variables

Composite variables for components of the TPB and all other distal factors were normally distributed for data on casual partners and for main partners. Please see Table 4 and Table 5 for the measures of central tendency and dispersion.

Bivariate Results

Antecedents of the Theory of Planned Behavior

First, to answer the research hypotheses 1, 2 and 3, and to follow the guidelines of the TPB, correlations were completed to examine the linear relationships of each of the belief factors with the corresponding antecedent in the model. For main partners, statistically significant strong, positive correlations were found for normative beliefs and subjective norms, $r(145)=.77$, $p<.001$; for pros and cons and attitudes, $r(151)=.64$, $p<.001$; and for self-efficacy and perceived behavioral control, $r(138)=.64$, $p<.001$. For casual partners, statistically significant strong, positive correlations were found for normative beliefs and subjective norms, $r(133)=.65$, $p<.001$; for pros and cons and attitudes, $r(127)=.79$, $p<.001$; and for self-efficacy and perceived behavioral control, $r(114)=.63$, $p<.001$. As the perception of the social pressure from referent groups (i.e.

friends, potential sex partners) as well as the importance of complying with this pressure increased, perceptions about important others' desire for one to use condoms for anal sex increased. Therefore, the null hypotheses were rejected and the research hypotheses supported in the relationship between normative beliefs and subjective norms, pros and cons and attitudes, and self-efficacy and perceived behavioral control. Though the correlations were strong, no relationship approached an absolute value of 1 and thus no variables were excluded for subsequent analyses due to multi-collinearity.

Table 4. Main Partner Predictor Variables: Measures of Central Tendency and Dispersion

Variable	N	Range	Mean	Median	S.D.	Skew
Subjective norms	160	4-28	16.68	16.00	7.19	-.01
Attitudes	161	5-35	23.45	22.00	7.53	-.08
Perceived behavioral control	155	3-21	14.81	15.00	4.19	-.58
Normative beliefs	150	1-49	20.90	17.33	13.06	70
Pros and cons	163	8-56	35.31	34.00	9.64	.16
Self-efficacy	144	13-65	49.54	52.00	13.84	-.87
Social norms						
Friends	156	1-7	3.60	4.00		
Potential sex partners	153	1-7	3.82	4.00		
Intentions	151	4-28	11.87	8.00	8.68	.79
Action planning	135	11-77	53.41	55.00	18.91	-.74

Second, correlations were conducted for each of the antecedent variables (e.g. subjective norms, attitudes, perceived behavioral control) with *intentions to use a condom at next sex* for main partners and for casual partners in order to test hypotheses 4, 5, and 6. As can be seen in Tables 6 and 7, statistically significant, positive relationships were

found among all variables. For main partners, relationships of attitudes and subjective norms to intentions were strong whereas the relationship of perceived behavioral control to intentions was moderately strong. For casual partners, attitudes, subjective norms and perceived behavioral control showed strong relationships with intentions. As favorable attitudes for condom use increased, intentions to use condoms at next sex increased. As subjective norms for condom use increased, intentions to use condoms at next sex increased. As perceived behavioral control over condom use increased, intentions to use condom at next sex increased. The tables also show that the interrelationships between antecedents were significantly, positively related. As favorable attitudes for condom use increased, perceived behavioral control over using condoms increased. As subjective norms for condom use increased, favorable attitudes for condom use increased. As one's level of perceived behavioral control over condom use increased, reported levels of subjective norms for condom use increased. Notably, the relationship between subjective norms and perceived behavioral control was moderate for main partners, suggesting that the relationship was not as strong.

Table 5. Casual Partner Predictor Variables: Measures of Central Tendency and Dispersion

Variable	N	Range	Mean	Median	S.D.	Skew
Subjective norms	137	6-28	22.98	24.00	5.06	-1.13
Attitudes	137	5-35	27.32	29.00	6.89	-.86
Perceived behavioral control	132	5-28	22.52	23.00	4.82	-.85
Normative beliefs	136	2-49	25.72	25.33	11.37	.05
Pros and cons	135	15-56	41.53	42.00	9.86	-.56
Self-efficacy	120	13-65	52.61	56.00	13.29	-1.34
Social norms	133	3-21	14.20	15.00	4.58	-.58
Intentions	128	4-28	21.22	23.50	7.48	-.81
Action planning	123	11-77	60.17	66.00	17.33	-1.19

Table 6. Intercorrelations Between Antecedents of TPB for Main Partners

	Subjective norms	*Attitudes*	*Perceived behavioral control*	*Intentions*
Subjective norms	-	.52***	.27**	.64***
Attitudes		-	.49***	.64***
Perceived behavioral control			-	.40***
Intentions				-

**p<.01, ***p<.001

Multivariate Analyses

Predictors of Intentions to Use Condoms at Next Sex

To test hypothesis 7, possible control variables were considered first. Bivariate analyses of demographic variables were conducted as potential predictor variables that needed to be controlled for in subsequent analyses, given that the variables have been found to be significant in past studies. The variables included age, race, ethnicity, town size, education, income, sexual orientation, sexual position, HIV status, as well as if the respondent had casual partners only, main partners only, or both partner types. Analyses were conducted separately with the dependent variable as intentions to use a condom with a casual partner and intentions to use a condom with a main partner. Results showed most all variables were not significant. Only age was significant for intentions to use a condom with a casual partner. Age was moderately, negatively related to intentions ($r(126) = -.30$, $p = .001$). As respondents' reported age increased, intentions to use condoms for anal sex with casual partners decreased. Only length of relationship was significant for intentions to use a condom with a main partner. There was a weakly

moderate relationship between relationship length and intentions to use a condom at next sex with a main partner ($r(147) = -.18$, $p = .03$). As respondents' reported length of relationship increased, they reported lower levels of intentions to use a condom with their main partner.

Table 7. Intercorrelations Between Antecedents of TPB for Casual Partners

	Subjective norms	*Attitudes*	*Perceived behavioral control*	*Intentions*
Subjective norms	-	.51***	.56***	.68***
Attitudes		-	.59***	.66***
Perceived behavioral control			-	.54***
Intentions				-

***$p<.001$

Next, multiple regression analyses were completed to understand the relationship between the antecedents from the TPB and distal factors to the dependent variable *intentions to use condoms at next sex*. Therefore, hierarchical regression analyses were completed to examine the relationships separately for main and for casual partners. The variables were entered in the following order in order to examine their contribution in explaining intentions:

Step 1. Significant control variables were entered (*relationship length* for main partner and *age* for casual partner)

Step 2. The antecedents were entered (e.g. *subjective norms*, *attitudes*, *perceived behavioral control*).

Step 3. The distal factors were entered (e.g. *normative beliefs, pros and cons, self-efficacy, and social norm*s).

For main partners, results indicated that the multiple correlation (*R*) was significant at each step of the regression at the $p < .001$ level. The adjusted R^2 at the final step was .62, indicating that these variables predicted a total of 62% of the variance in intentions. Furthermore, the change in R^2 was significant for all models (steps) at the $p < .001$ level, which indicated that the variables entered at each step added unique contributions to the variance explained by each model. Table 8 displays the three models and shows which variables were significant at each step of the analysis.

In the first model, relationship length was statistically significant and accounted for six percent of the variance, suggesting that relationship length is weakly related to intentions to use condoms at next sex. In the second model, subjective norms and attitudes were the significant predictors, but perceived behavioral control was not significant. Relationship length was no longer a significant predictor. The model accounted for 54 percent of the variance in *intentions to use condoms at next sex*. In the third model, subjective norms remained significant. However, the contribution of attitudes was explained by other variables. Pros and cons emerged as a significant predictor. Normative beliefs, self-efficacy, and social norms were not significant. The final model accounted for 62 percent of the variance in *intentions to use condoms at next sex*. The third model accounted for a large amount of the variance, which suggests that the model included variables that were strongly predictive of intentions to use condoms. Namely, subjective norms for condom use and pros and cons for condom use significantly accounted for a large portion of the variance in respondents' level of intention to use a condom during their next sexual encounter. Among this sample of MSM, increased perceptions of important others' expectations for condom use and agreement with more pros for condom use and agreement with less cons of condom use are strongly predictive of higher levels of intentions to use a condom at next sex with a

main partner. In this model for main partners, perceived behavioral control and self-efficacy are not significant, suggesting that a respondent's perceived level of control over using condoms and confidence in the ability to use condoms in spite of barriers does not relate to intentions to use condom with a main partner.

Table 8. Regression Model Predicting Intentions to Use Condoms with Main Partners

	Model I		*Model II*		*Model III*	
Independent Variable	Beta	*t*	Beta	*t*	Beta	*t*
Relationship length	-.23*	-2.63	-.07	-1.12	-.01	-.17
Antecedents						
Subjective norms			.45***	6.07	.28**	2.93
Attitudes			.33***	3.95	.14	1.70
Perceived behavioral control			.09	1.22	.02	.25
Distal Factors						
Normative beliefs					.06	.61
Pros and cons					.38***	4.69
Self-efficacy					.03	.42
Social norms						
Friends					-.02	-.17
Potential sex partners					.10	1.11
R^2	.06		.56		.65	
Adjusted R^2	.05		.54		.62	
R^2 *Change*	--		.50***		.09***	
F Value	6.90*		36.32***		22.88***	

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

For casual partners, results indicated that the multiple correlation (R) was significant at each step of the regression at the $p < .001$ level. The adjusted R^2 at the final step was .68, indicating that these variables predicted a total of 68% of the variance in intentions. Furthermore, the change in R^2 was significant for all models (steps) at the $p <$

.001 level, which indicated that the variables entered at each step added unique contributions to the variance explained by each model. Table 9 displays the three models and shows which variables were significant at each step of the analysis.

In the first model, age was significant and accounted for six percent of the variance, suggesting that age is weakly related to intentions to use condoms at next sex. In the second model, subjective norms and attitudes were the significant predictors, but perceived behavioral control was not significant. Additionally, age was no longer a significant predictor. The model accounted for 61% of the variance in *intentions to use condoms at next sex*. In the third model, subjective norms remained significant. However, the contribution of attitudes was explained by other variables. Normative beliefs, pros and cons, and self-efficacy emerged as significant predictors. Social norms was not significant. The final model accounted for 68% of the variance in *intentions to use condoms at next sex*. Subjective norms, normative beliefs, pros and cons, and self-efficacy were strongly predictive of intentions to use condoms at next sex and accounted for a high proportion of the variance in the degree of intentions to use condoms at next sexual encounter among this sample of MSM. Among this sample of MSM, increased perceptions of important others' expectations for condom use, higher levels of the perception of the social pressure from referent groups (i.e. friends, potential sex partners) as well as the importance of complying with this pressure, agreement with more pros for condom use and agreement with less cons of condom use, as well as increased confidence in one's ability to use condoms in spite of the barriers, were predictive of higher levels of intentions to use a condom at next sex with a casual partner.

Predictors of Action Planning for Condom Use

To answer the third research question and test hypothesis 8, Pearson's correlations and simple linear regression analyses were conducted to assess the relationship between *action planning* and *intentions to use condoms at next sex* for main partners and separately for casual partners.

For main partners, the results of the Pearson's correlation indicated a statistically significant, strong, positive relationship between the variables, (r = .57, p < .001). Additionally, a simple linear regression was conducted to determine the amount of variance in action planning that was explained by intentions to use condoms at next sex. The results showed that intentions to use condoms at next sex was a significant predictor of action planning (F (1,132) = 62.56, p < .001). Approximately 32% of the variance in action planning was explained by its linear relationship with intentions to use condoms at next sex.

Table 9. Regression Model Predicting Intentions to Use Condoms with Casual Partners

	Model I		*Model II*		*Model III*	
Independent Variable	Beta	*t*	Beta	*t*	Beta	*t*
Age (in years)	-.25*	-2.62	.03	.48	.06	.89
Antecedents						
Subjective norms			.48***	6.10	.20*	2.20
Attitudes			.38***	4.52	.03	.32
Perceived behavioral control			.06	.77	.04	.50
Distal Factors						
Normative beliefs					.18*	2.11
Pros and cons					.26*	2.44
Self-efficacy					.18*	1.99
Social norms					.15	1.68
R^2	.06		.62		.71	
Adjusted R^2	.05		.61		.68	
R^2 *Change*	--		.56***		.09***	
F Value	6.86*		40.85***		28.77***	

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

For main partners, the results of the Pearson's correlation indicated a statistically significant, strong, positive relationship between the variables, (r = .57, p < .001). Additionally, a simple linear regression was conducted to determine the amount of variance in action planning that was explained by intentions to use condoms at next sex. The results showed that intentions to use condoms at next sex was a significant predictor of action planning (F (1,132) = 62.56, p < .001). Approximately 32% of the variance in action planning was explained by its linear relationship with intentions to use condoms at next sex.

For casual partners, the results of the Pearson's correlation indicated a statistically significant, strong, positive relationship between the variables, (r = .72, p < .001). A simple linear regression was conducted to determine the amount of variance in action planning that was explained by intentions to use condoms at next sex. The results showed that intentions to use condoms at next sex was a significant predictor of action planning (F (1,119) = 125.67, p < .001). Approximately 51% of the variance in action planning was explained by its linear relationship with intentions to use condoms at next sex.

Given that intentions was found to be a significant predictor of action planning, exploratory analyses were conducted to understand the contribution of the present thesis study variables (e.g. antecedents and distal factors) as predictors of action planning over and above the variance in action planning explained by intentions alone. Therefore, hierarchical regression analyses were completed to examine the relationships separately for main and for casual partners. The variables were entered in the following order in order to examine their contribution in explaining action planning:

Step 1. Intentions were entered

Step 2. The antecedents were entered (e.g. subjective norms, attitudes, perceived behavioral control).

Step 3. The distal factors were entered (e.g. normative beliefs, pros and cons, self-efficacy, and social norms).

For main partners, the results indicated that the multiple correlation (*R*) was significant at each step of the regression at the $p < .001$ level. The adjusted R^2 at the final step was .42, indicating that these variables predicted a total of 42% of the variance in action planning. Furthermore, the change in R^2 was significant for the second model (step) at the $p < .001$ level, but was not significant for the third model (step). The lack of significance in Model III indicated that the level of unique variance added by the distal factors in the third step was not significant, though the overall model was significant due to the significant contributions of the variables added on Step 2 (Model II). Table 10 displays the three models and shows which variables were significant at each step of the analysis.

In the first model, intentions were significant and accounted for 32% of the variance. The value indicated that intentions were strongly related to action planning: as intentions to use condoms increased, the level of action planning for condom use increased. In the second model, intentions and perceived behavioral control were the significant predictors, but attitudes and subjective norms were not significant. The model accounted for 40% of the variance in action planning. In the third model, as stated above, normative beliefs, pros and cons, self-efficacy, and social norms contributed slightly to the variance explained by the model, but the change was not significant. Therefore, the second model with the significant predictors of intentions and perceived behavioral control best fit the data for main partners. A large amount of variance was explained by intentions and perceived behavioral control. As intentions to use condoms increased and perceived behavioral control over condom use was higher, action planning to use a condom for anal sex with a main partner increased.

For casual partners, the results indicated that the multiple correlation (*R*) was significant at each step of the regression at the $p < .001$ level. The adjusted R^2 at the final

step was .72, indicating that these variables predicted a total of 72% of the variance in action planning. Furthermore, the change in R^2 was significant for all models (steps) at the $p < .001$ level, which indicated that the variables added at each step added unique contributions to the variance explained by the models. Table 11 displays the three models and shows which variables were significant at each step of the analysis.

Table 10. Regression Model Predicting Action Planning with Main Partners

	Model I		*Model II*		*Model III*	
Independent Variable	Beta	*t*	Beta	*t*	Beta	*t*
Intentions	.56***	7.05	.33**	2.99	.21	1.65
Antecedents						
Subjective norms			.10	1.01	.12	.86
Attitudes			.06	.55	.02	.22
Perceived behavioral control			.31**	3.49	.17	1.56
Distal Factors						
Normative beliefs					-.02	-.17
Pros and cons					.18	1.62
Self-efficacy					.19	1.85
Social norms						
Friends					-.12	-1.01
Potential sex partners					.11	.90
R^2	.32		.42		.46	
Adjusted R^2	.31		.40		.42	
R^2 *Change*	--		.10**		.05	
F Value	49.74***		18.82***		9.58***	

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

In the first model, intentions were significant and accounted for 53% of the variance. The value indicated that intentions were strongly related to action planning. In the second model, intentions, attitudes, and perceived behavioral control were the significant predictors, but subjective norms were not significant. The model accounted for 61% of the variance in action planning. In the third model, self-efficacy emerged as the significant predictor among all variables entered into the third model. Normative beliefs, pros and cons, and social norms were not significant. Additionally, the results of the third model indicated that the contribution of perceived behavioral control, attitudes, and intentions, which were significant predictors in Model II, were explained by the addition of self-efficacy to the model. Given the significant increase in the variance explained by self-efficacy, the third model best fit the data for casual partners. Self-efficacy accounted for a very large amount of the variance in action planning, suggesting that increases in one's confidence to use condoms in spite of the barriers that exist is highly predictive of action planning to use a condom for anal sex with a casual partner.

Exploratory Analyses

Research question 4 and the exploratory hypotheses 9, 10, and 11 regarding the relationship of stages of change and TPB variables were assessed using Spearman's rho. The results showed that subjective norms, attitudes, and perceived behavioral control were positively related to the stages of change for casual partners and for main partners. Thus, the research hypotheses were supported. Results are shown in Table 12. As participants reported higher levels of subjective norms, higher levels of favorable attitudes, and higher levels of perceived behavioral control, the reported stage of change increased. The results indicated the relationship of both theories, TPB and TTM, and suggested that as levels of subjective norms increase, attitudes become more positive, and perceived behavioral control increases as participants advance in the stages of change.

Table 11. Regression Model Predicting Action Planning with Casual Partners

	Model I		*Model II*		*Model III*	
Independent Variable	Beta	*t*	Beta	*t*	Beta	*t*
Intentions	.73***	10.69	.39***	3.85	.18	1.85
Antecedents						
Subjective norms			.09	1.01	-.06	-.68
Attitudes			.22*	2.39	-.02	-.16
Perceived behavioral control			.22*	2.60	.15	1.95
Distal Factors						
Normative beliefs					.16	1.94
Pros and cons					-.00	-.01
Self-efficacy					.54***	6.22
Social norms					.06	.73
R^2	.53		.62		.74	
Adjusted R^2	.53		.61		.72	
R^2 *Change*			.09***		.12***	
F Value	114.36***		40.65***		34.08***	

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

Table 12. Bivariate Relationship (Spearman's rho) of Stages of Change to TPB Variables

	Main partner Stages of Change	Casual partner Stages of Change
Subjective norms	.61***	.61***
Attitudes	.64***	.57***
Perceived behavioral control	.37***	.52***
Intentions	.81***	.87***

***p<.001

A final exploratory analysis examined alternative strategies to condom use for anal sex. Alternative strategies besides using condoms that reduce risk of HIV were reported by participants on a five-point Likert scale ranging from a low of 1 or *never* to a high of 5 or *always*. The results show that participants reported using most all of the strategies at least *sometimes*. Practicing withdrawal prior to ejaculation and only having anal sex without a condom as the insertive partner (top) were the least frequently used strategies with an average response closer to *rarely*. Using plenty of lubricant and only having anal sex with partners of the same HIV status as oneself were the most frequently used strategies with an average response of *usually*.

Table 13. Means for Alternative Strategies to Condom Use by Partner Type

Alternative Strategy	Main partner only x *(n)*	Casual partner only x *(n)*	Both main and casual partners x *(n)*
Only have sex with partner of same HIV status	4.25 (48)	4.11 (38)	4.29 (93)
Ask every partner about HIV status	4.06 (49)	3.53 (45)	3.76 (111)
Ask every partner when tested for HIV	3.98 (45)	2.80 (44)	3.25 (110)
Get tested for HIV regularly	3.60 (60)	3.86 (43)	3.63 (105)
Mutually monogamous relationship	4.68 (63)	1.82 (28)	2.96 (92)
Develop trust before sex	4.42 (62)	3.02 (43)	3.50 (109)
Reduce number of partners	4.50 (42)	3.26 (43)	3.51 (106)
Avoid anonymous partners	4.46 (57)	3.02 (45)	3.49 (106)
Only sex without condom when top	2.36 (47)	2.58 (36)	2.47 (97)
Loosen rectum prior to sex	3.87 (61)	3.26 (43)	3.51 (106)
Withdrawal prior to ejaculation	2.05 (63)	2.41 (46)	2.44 (102)
Use plenty of lubricant	4.63 (67)	4.27 (45)	4.42 (111)
Avoid douching prior to receptive anal sex	3.13 (48)	3.03 (32)	2.81 (83)
Avoid rough sex	3.86 (64)	2.77 (43)	3.31 (106)
If partner is HIV positive, avoid sex without a condom when viral load is not undetectable	3.40 (15)	3.26 (19)	3.72 (40)
If HIV positive, avoid sex without condom when viral load is not undetectable	2.70 (10)	2.78 (9)	4.07 (14)

CHAPTER 5

DISCUSSION

Summary of Results

The present thesis study lends considerable support to the relationship among the variables of the Theory of Planned Behavior. Correlational analyses revealed that distal factors were strongly, positively related and that the antecedents of the TPB were strongly, positively related to intentions to use condoms at next sex for both main and for casual partners. The strength of the relationship for both casual and main partner types suggested the TPB's applicability to online studies of MSM by partner type.

Additionally, the findings of the regression analyses to predict intentions demonstrated the ability of the variables from the TPB to parsimoniously account for a large portion of the variance in intentions to use condoms at next sex. The different variables that emerged as significant predictors for main partner and for casual partner models confirmed the importance of examining condom use or other sexual behavior-related variables separately by partner type. For main partners, perceived behavioral control and self-efficacy were not significant in any model. In contrast, the models for casual partners showed self-efficacy to be a predictor of intentions in the final model. The results suggested that intentions to use condoms with a main partner was influenced by perceptions of what important others think one should do and agreeing with more pros and less cons to condom use, but not whether one did or did not feel confident in using a condom with a main partner in spite of barriers.

The mean of intention to use a condom with a main partner in the sample was lower than the mean for a casual partner. Self-efficacy may be less important when intentions to use a condom are lower. The relationship also may be dependent on the difficulty of the task. If using a condom with a main partner is perceived as less difficult, self-efficacy may not be related to level of intentions (Wieber, Odenthal, & Gollwitzer,

2010). However, the final model accounted for a high amount of variance in intentions to use a condom with a main partner, thus it is unlikely that another variable not accounted for by the model would add a significant amount to the explanatory power of the model. Subjective norms and pros and cons accounted for a majority of a respondent's level of intentions to use a condom with a main partner.

In the present thesis study, self-efficacy was conceptualized as a measure of control beliefs and pros and cons as a measure of behavioral beliefs. The models to predict intentions and action planning with both casual and main partners suggested that pros and cons was a better predictor of intentions than attitudes. Self-efficacy appeared to be a better predictor of intentions and action planning than perceived behavioral control. Notably, normative beliefs and subjective norms were significant in the prediction of intentions with casual partners. Normative beliefs and subjective norms were both measured with items used from Saunders et al.(2004) and Davis et al.(2002). This may have ensured that the validity of the two measures was upheld as they related to the model. With self-efficacy and pros and cons, it may be that these variables were additional antecedents in the model instead of being distal factors that led to the antecedents (e.g. perceived behavioral control and attitudes) in the theoretical model. Importantly, the variables did not seem to be replacements for attitudes and perceived behavioral control. As previously stated, no variables were removed due to multi-collinearity. Additionally, the findings of Noar et al. (2001) upheld the convergent and discriminant validity of pros and cons in relation to attitudes. With structural equation modeling and other statistical methods beyond the scope of the present thesis study, future research might attempt to clarify how the variables best fit within the framework of the Theory of Planned Behavior.

The lack of internal consistency of the items from the perceived behavioral control scale must be noted. Nunnally (1978) argued for a .65 criterion level of Cronbach's alpha. For main partners, the perceived behavioral control scale had an

alpha value of .63. Since the scale only contained 4 items, no items could be deleted from the scale in order to retain content validity. For the present thesis study, the decision was made to use the scale in analyses because the alpha was close to .65. However, the findings regarding perceived behavioral control in relation to other antecedents and in the main partner models to predict intentions and action planning should be interpreted with caution. Importantly though, self-efficacy was not significant in main partner models either. Given this, it is plausible that even with a stronger measure of perceived behavioral control, the results of the models would have been similar.

In regard to the regression models to predict action planning, of particular importance is the difference in the amount of variance explained by the models for main partners compared to casual partners. Again, the findings add merit to the investigation of intentions and behavior separately by partner type. The final model for casual partners accounted for 30% more of the variance than the final model for main partners. This suggested that the final model for casual partners would yield much more accurate predictions of action planning based on the study variables compared to the final model for main partners. Whereas the variance explained by the final models to predict intentions for casual partners and for main partners were very similar, the difference in variance explained by the final models for action planning suggested that other variables not included in the present thesis study and the Theory of Planned Behavior may have produced a stronger model to predict action planning for main partners.

Past studies have suggested that action planning is a better predictor of behavior than intentions alone (Schwarzer, 2008; Arden et al., 2008; Gollwitzer & Sheeran, 2006). As mentioned in the literature review, implementation intentions are closely aligned with the concept of action planning as both concepts refer to the level of planning regarding when, where and how preparatory and target behaviors will be carried out (van Osch et al., 2009). Two studies have begun to examine the importance of implementation

intentions with condom-related behaviors (i.e. condom-buying, condom-carrying, condom negotiation) among adolescents. Findings supported the ability of implementation intentions to translate intentions to perform condom-related behavior into behavioral performance (de Vet et al., 2011; Arden et al., 2008). Given this, predictors of action planning may be better predictors of future behavior.

Notably, in the present thesis study, the strongest predictors of intentions were different than the strongest predictors of action planning. For main partners, perceived behavioral control and intentions were the significant predictors of action planning compared to subjective norms and pros and cons as the predictors of intentions. In the regression model for casual partners, self-efficacy was the only significant predictor of action planning for condom use, whereas subjective norms, normative beliefs, pros and cons, and self-efficacy were all significant predictors of intentions to use condoms at next sex. Consequently, interventions to promote condom use with casual partners among MSM may target their resources differently if the objectives are to change norms, promote more pros and less cons of condom use, and enhance self-efficacy. Alternatively, resources may be strongly focused on enhancement of self-efficacy if found to be most likely to result in changes in condom use behavior with casual partners.

Some evidence exists to support the present thesis study's finding of the importance of the predictors of action planning. Similar to findings for main partners, Arden et al. (2008) showed that progression in stages of change of condom-related behaviors, due to an intervention focused on developing implementation intentions, was predicted by the study variables of perceived control and intention, in addition to age and gender. In regard to the importance of self-efficacy in the model for casual partners, a meta-analysis examining the relationship of self-efficacy to goal intentions and implementation intentions across various behaviors found a very weak relationship (Webb & Sheeran, 2008). However, a study by Wieber et al. (2010) suggested that self-efficacy may mediate the relationship between implementation intentions and goal

attainment. Specifically, high self-efficacy in addition to strong implementation intentions were necessary when goal attainment was difficult (i.e. one is faced with a complicated task). Thus, it may be that for those whom using a condom with a casual partner is a more difficult task, a high level of self-efficacy is needed.

The relationship of the stages of change from the Transtheoretical Model to the antecedents from the TPB supported the exploratory hypotheses and showed the ability of the stages of change to discriminate among participants at different levels of subjective norms, attitudes, and perceived behavioral control. The findings also supported the model of the TPB given that levels of the antecedents were lower in less advanced stages and higher in more advanced stages. Importantly, both models may be useful to discriminate among participants in the behavior change process.

The results of alternative strategies to condom use for anal sex demonstrated that respondents are using various methods in addition to or instead of condoms to reduce their risk of HIV during anal sex. Given that most studies measure condom use as the prevention behavior and most prevention programs are focused on condom use for MSM (CDC, 2010), the findings suggest that future research and interventions collect data on alternative strategies being used and efficacy of the strategies in reducing risk. Condom use might be considered as one of several possible strategies to reduce risk in future intervention efforts. Advocacy for a sexual health approach that emphasizes harm reduction is emerging in the literature to support such interventions (Landers et al., 2011).

Limitations

The sampling design of the study limits the external validity for five main reasons. First, the sample may not be representative of Iowa MSM who use the Internet because random sampling was not feasible due to the hidden nature of the MSM community. Second, participants were recruited from two websites and a newspaper. The websites were not representative of the broad array of websites where MSM may go to interact and look for sex. For example, sites that cater to barebackers, men with

specific fetishes, or men looking for public sex such as Bareback.com and Craigslist could not be accessed due to the sites' policies that prohibit advertisements or soliciting from researchers. Generally, members of these sites may be seeking higher risk sexual behavior than participants recruited from more mainstream sites. Furthermore, sites likes Adam4Adam and Manhunt, which are highly popular with a broad demographic of MSM who are looking for sex or dating were unable to be used in the present thesis study due to the prohibitive cost associated with their use. With this, bisexual men, men who do not identify as gay or bisexual, men who are not out, men in more rural areas, and men who generally are at higher risk may be underrepresented in the sample of the present thesis study.

Third, Facebook and ACCESSline emphasized recruitment of out gay and bisexual men. Targeted ads on Facebook were visible on profiles of men who indicated on their profiles that they were interested in men. Importantly, men in more rural areas and bisexual men may be underrepresented due to stigma and unwillingness to divulge their sexual identity on a mainstream social networking site. ACCESSline publications are distributed in mostly urban locations and in venues that are welcoming to the LGBT community. Fourth, MSM who are more discreet with their same sex behavior such as bisexual men, men who are married or men in rural areas of the state may have been unwilling to participate in the study for fear of their identity being released. Due to these factors, MSM in rural areas accounted for a low percentage of the sample.

Fifth, the study was restricted to men who lived in Iowa or bordering cities. Therefore, the participants may not be representative of MSM in other states.

Thus, the results of the study should be interpreted within the limits of the sampling design and generalizations to MSM on a statewide or Midwestern scale should be done with caution. Future studies should identify potential sampling sources that will allow a proportionate sampling of rural men as well as MSM who do not identify as gay such as bisexual or some heterosexual men.

A cross-sectional design was used for the present thesis study. The design limited the collection of data to one point in time. Therefore, the study could not assess causal relationships between and among study variables. Furthermore, intentions to use condoms at next sex could not be examined in relation to whether condom use did or did not occur during next sexual encounter. In light of this limitation, an important note is that the model proposed in the study with the suggested relationship of intentions and action planning could not be appropriately be examined. A longitudinal design would be necessary to establish whether intentions precede, and thus predict, action planning.

For action planning, the instrument's reliability and validity with a sample of MSM is uncertain given that the scale had only been used previously with heterosexual college students. Additionally, changes to the response set and the wording of items may have impacted the validity and reliability of the scale. However, the foundation of the scale on a published instrument subjected to factor analysis supported the measure's content and factorial validity.

The length of the instrument may have impacted the number of men who consented to the survey and the number of participants who completed the survey. Particularly, the respondents who had both main and casual partners were faced with a higher amount of items to complete and longer length of time to complete the survey. However, Pequegnat et al. (2007) noted that there is no set standard for the number of items or length of time to complete that is acceptable. Moreover, they shared that other studies of similar length to the present thesis study have been completed with no compensation with low attrition rates as well as longer surveys with similar compensation and low attrition rates. Additionally, though, they discussed the need for surveys to be interesting and engaging. Respondents with main and casual partners responded to identical sets of items with only the term "casual" and "main" replaced. The similarity of the items may have related to increased attrition rates (Pequegnat et al., 2007).

The survey focused on the use of condoms for anal sex. In fact, about 65% of the survey items included a reference to the use of a condom for anal sex for those who completed either the main or casual partner set of items. For those who completed both sets, 77% of the survey focused on condom use. Participants may have felt that the survey researcher had an agenda to promote condom use. In response, social desirability bias may have caused participants to answer questions so that they appeared to endorse the use of condoms more than they actually did. Social desirability bias may have been especially important with intention items. Participants may have wanted to appear as intending to use condoms in the future more than what is an accurate description of their intent. Notably, Ajzen (2011) discusses the tendency for measures of intention to overestimate behavioral predictions. Alternatively, respondents who were more unfavorable to condom use may have believed that the survey was biased toward the use of condoms or believed that the survey did not validate their alternative method of reducing their risk of HIV—such as serosorting or reducing number of partners. Additionally, if condom fatigue was present (Rowniak, 2009), men may have been averse to answering numerous questions focused on condom use. Attrition rates may have been higher among these men due to the emphasis on condom use in the survey.

The focus of the present thesis study on anal sex was evident as well in the investigation of alternative strategies to condom use and presented a limitation. The alternative strategies were ways to reduce risk of HIV acquisition through anal intercourse. Significantly, MSM may use other strategies to reduce the risk of getting HIV. Rosenberger et al. (2011) in a national study of gay and bisexual men found that only 37% reported engaging in anal sex during their last sex event with a male. That is, the majority of men used alternatives such as kissing, partnered masturbation, oral sex and other sexual behaviors which are generally low-risk for acquiring HIV. In regard to the present thesis study, approximately 30% of potential respondents who were over 18 and male became ineligible to complete the survey because they had not had anal sex

with a man in the last 12 months. Given that recruitment was specifically targeted to MSM, this suggested that many of the ineligible respondents were MSM engaging in other forms of intimacy besides anal sex with partners. Therefore, the present thesis study's investigation of alternative strategies should be interpreted in light of the fact that the results were only among those who had had anal sex events within the last year. Moreover, the findings of Rosenberger and colleagues suggested that future research would need to incorporate strategies such as oral sex and partnered masturbation to assess if indeed these acts are done purposefully to lower risk of HIV.

While input from MSM in central Iowa was received in creating portions of the survey, the lack of an elicitation study must be noted. Fishbein(2000) discussed the importance of going to the community members to identify the attitudes and normative referent groups that are most salient for the particular sample. In the present thesis study, social norms did not have a significant effect on any of the regression models to predict intentions or action planning. Though subjective norms were found to be significant in some models, the strength of the relationship was explained by other factors. The possibility exists that the referent groups used in the present thesis study (i.e. friends, potential sex partners) were not salient for the survey participants and thus showed a weaker relationship with the dependent variables.

A limitation that became evident with the survey design was in regard to respondents in long-term mutually monogamous relationships who completed the survey. Most of the survey questions were focused on condom use. The researcher identified that in creating the survey, especially the items to measure intentions to use condoms at next sex seemed to imply that even monogamous main partners should be using condoms with their partner. In response, the researcher added wording to the introduction of the main partner questions which stated that the individual may or may not use condoms with their partner, but either way, "we're interested in your responses". However, in order to

follow the behavioral theories and the wording necessary, wording of survey items were not changed to be more sensitive to mutually monogamous survey respondents

Importantly, two respondents sent feedback to the researcher after completing the survey and shared that they had a difficult time answering the questions. One participant shared that the action planning items were confusing for him in that he did not know how to answer about his level of planning since he did not use condoms with his main partner and did not plan to use them in the context of his monogamous relationship. (He pointed out the level of trust that had been developed, the length of time they had been together, the importance of honesty in their relationship, and getting tested for HIV together and staying safe through the first six months of their relationship.) Another participant expressed that the intention items implied that he should be using condoms with his main partner and he felt these questions were judgmental.

The two participants received a response from the researcher to apologize for the confusion and frustration experienced. The researcher explained that in order to follow certain behavioral theories that exist, the survey had to contain certain types of questions that were worded in a very specific way. Understandably, limitations and disadvantages exist of relying on existing theories. Furthermore, many disadvantages exist with a survey research tool that does not allow for face-to-face contacts and the ability to capture the nuances in individuals' responses. The points raised by the participants were a strong example of the limitations that are present. They were informed that their feedback would be shared in a general and confidential way in the limitations of the present thesis study.

The unfortunate effect of using questions that may have further stigmatized a stigmatized minority group such as the gay community cannot be overstated. Though the design of a survey that would ask a set of questions to re-route participants to other items within the survey who are in long-term mutually monogamous relationships may prove difficult, efforts should be made to avoid duplication of the present issue in which all

those with main partners, regardless of the monogamy of the relationship, received the same set of questions.

Implications for Research and Practice

Recent studies to investigate the role of implementation intentions, or action planning, utilized experimental designs so that intentions could be manipulated and changes could be documented over time (de Vet et al., 2011; Arden et al., 2008). More studies are needed to assess the relationship of self-efficacy as a predictor of action planning and/or a mediator of the relationship between action planning and behavior.

Furthermore, more studies are needed to examine the mediating role of action planning in relation to intentions and behavior, especially in the area of sexual behavior of MSM. Arden et al. (2008) provided encouraging findings for the development of implementation intentions among adolescents in an experimental design that involved an intervention to create implementation plans. A study of MSM may be done in a similar fashion with an experimental group that forms implementation intentions and a control group that does not and assesses differences between the two groups at baseline and follow up to consider the importance of action planning in mediating the relationship of intentions and behavior. Additionally, the importance of self-efficacy could be assessed as well and might include a measure of the level of difficulty subjects perceive in implementing condom use with a future partner. Importantly, condom use with casual partners and main partners must be studied separately.

Future studies must use longitudinal designs in order to make more definitive arguments regarding the necessity of including action planning in order to more accurately predict behavioral performance. Indeed, if action planning is an important mediator, future studies should measure action planning in addition to intentions. Notably, many current intervention studies on sexual behavior, especially those using cross-sectional designs, only measure intentions as a dependent variable.

Additionally, interventions such as Counseling, Testing and Referral (CTR) might benefit from a standardized component using action planning. CTR is an intervention promoted and taught to HIV testing providers that covers basics on counseling skills, the technical components of HIV testing, and providing appropriate referrals to those who test HIV-negative and HIV-positive. States might work to standardize risk reduction plans that plot out implementation intentions and action plans to increase the likelihood that changes in behavioral intentions are translated into changes in behavioral performance. While some agencies use risk reduction plans that include planning with the client when, where and how preparatory and target behaviors occur, this is not standardized practice across agencies and states (undisclosed, personal communication, November 13, 2011).

In order to provide clarity, the suggested emphasis on action planning or implementation intentions must be supported by strong intentions and thus an intervention cannot solely focus on the development of implementation plans. Gollwitzer (1999) discussed the importance of strong intentions as a precursor to creating implementation intentions that result in behavioral performance. Therefore, the present thesis study's findings regarding the significant predictors of intentions would be necessary components of an intervention with Iowa MSM that is likely to produce successful outcomes.

Currently, APCI is funded to conduct the intervention PROMISE (Peers Reaching Out and Modeling Intervention Strategies Effectively) which is an approved effective behavioral intervention offered through the CDC (CDC, 1996). The main goal of the program is to shift behavioral norms in a community so that the community advances in stages of change, MSM in central Iowa in this case. The findings of the present thesis study for both casual and for main partners suggested that norms are significant predictors of condom use and thus are important to emphasize in programming. Additionally, the intervention may benefit by incorporating into role model stories (brief

stories that highlight community members' advancement from one stage of change to another in regard to condom use) and other intervention techniques or ways to add pros for condom use to produce a shift in the decisional balance of pros versus cons for the target behavior (Prochaska et al., 1992). Furthermore, to create strong intentions for condom use with casual partners, role model stories and other intervention techniques should incorporate self-efficacy-enhancing strategies so that MSM have increased confidence to use condoms with casual partners even in the face of the barriers that exist (Bandura, 1994).

Importantly, a central component of PROMISE is a team of influential peers, a street team, recruited from the local MSM community who are trained in the basics of HIV prevention and how to have discussions with friends and acquaintances about ways to reduce risk, provision of supplies such as condoms and lubricant, and resources and referrals to provide as necessary. Given the findings of the present thesis study, the street team could be trained in how to help their peers form implementation intentions with peers whom they have worked with to promote norms regarding condom use (and thus promoting an increase in intentions to use condoms). Given the work of Gollwitzer (1999), this may be as simple as having the street team help peers think through when, where, and how they will obtain condoms, carry condoms, discuss condom use with a partner, and/or handle putting a condom on.

Given the present thesis study's roots in the field of social work and in humble recognition of the strengths and assets of the MSM community, resiliency theory must be upheld as a future pathway for research related to HIV and co-occurring factors such as mental health, substance use and trauma among MSM. The work of Amy Herrick has blazed a path in this regard to reframe the questions from a disease focus to those where researchers take note that most MSM are still HIV negative and are productive members of society---even when faced with a high level of adversity and stigma in the broader culture---and ask, what accounts for this? Herrick and colleagues (2011) suggest that

researchers think of new ways to consider epidemiological research and research questions related to predictors of HIV risk.

The authors contend that variables such as self-efficacy, attitudes, action planning and others place the blame on MSM by implying that MSM are deficient in some way when studies propose MSM lack self-efficacy, have negative attitudes about condoms, or need to learn to plan the implementation of their actions. Instead, they ask, what are the inherent qualities that MSM possess that have allowed them to be resilient? Whereas the present thesis study investigated self-efficacy, norms and attitudes, Herrick et al. might invite the researcher to consider correlates that focus on strengths such as self-monitoring, which reframes self-efficacy to control that an individual possesses, and sexual creativity that focuses on further development of norms within this context instead of a focus on replacing norms that are wrong or deficient (i.e. MSM do not have norms for using condoms) (Herrick et al., 2011). The strength of sexual creativity in an investigation might be more along the lines of the present thesis study's inclusion of alternative risk reduction strategies besides condom use that highlight MSM's savvy and creativity as well as an inherent capacity for health and risk reduction.

Whereas the infusion of resiliency theory in HIV prevention is relatively new in the literature, the field of practice has used aspects of resiliency theory and has successfully incorporated a strengths-based approach and resiliency theory into interventions with MSM. Pickett was the pioneer of LifeLube and the "Gay, Sexy, Healthy" campaign in Chicago that emphasized a strength-based approach focused on wellness and being positive about sexual creativity, or sex positive (Landers et al., 2011). Importantly, the intervention, PROMISE, for which APCI is funded and for which the present thesis study was done, is moving forward with a similar theme. Project HIM – Healthy Iowa Men reframes HIV prevention within the context of men's health, resiliency and strengths. Notably, the focus recently has been recognized by the CDC.

Recent articles have stressed the need for a sexual health model to guide interventions that are holistic and sex-positive (Wolitski & Fenton, 2011).

Policy Implications

In 2010, the first National HIV/AIDS Strategy was created by the Obama administration. In line with this, the CDC has focused efforts on HIV testing as a prevention strategy in order to increase the number of MSM who know their status. Additionally, the Strategy called for a redistribution of prevention funding to cities that have the highest rates of HIV infection (i.e. Miami, Atlanta, San Juan, Baltimore, Houston, etc.). In turn, low incidence states like Iowa have received dramatic cutbacks in funding. By 2013, the operating budget of the Iowa Department of Public Health, the main source for HIV prevention funding in the state, will be reduced by 55% from the level of funding the state received in 2010. The funding for low incidence states is provided for HIV testing, condom distribution, and prevention with HIV-positive persons.

Significantly, behavioral interventions will no longer exist in Iowa, aside from the directly-funded CDC PROMISE program that will continue through 2015. Given that community level, group level and individual level interventions have been found to be effective (Wang, Brown, Shen & Tucker, 2011; Dilley et al., 2007; Lightfoot, Rotheram-Borus, & Tevendale, 2007), this raises concerns about the lack of these programs. The variables included in the theoretical framework account for behavior in varying degrees. The findings of the present thesis study showed that the variables accounted for a large portion of the variance in intentions and action planning to use condoms. An emerging body of literature suggests that action planning/implementation intentions may be a strong predictor of future behavior when coupled with high levels of intentions (Gollwitzer & Sheeran, 2006). With these findings in the current body of knowledge, serious doubts are raised about the ability of the state to maintain currently low levels of HIV prevalence without interventions that target these variables and influence positive

behavior change. While a focus on HIV testing to increase the number of MSM who know their status and to mitigate a "condoms only" approach to HIV prevention may be a step in the right direction, the lack of funding to support interventions that promote HIV testing through changing norms, increasing pros and lessening cons, increasing self-efficacy that lead to intentions to test for HIV and ensuring action plans are in place, may have limited impact. That is, behavior does not change without attending to the factors that influence whether a behavior occurs or not. Even if funds are available to assure that HIV testing is available, MSM who test may not take advantage of the service. In the same vein, the work that has been done through interventions within the state to promote condom use may begin to slip away without the support of interventions.

Understandably, Iowa and other low incidence states will need to learn to do more with less, as is typical in human services. The future of HIV prevention in states such as Iowa, Nebraska, and Wyoming that are branded as "low incidence" states and have a combination of urban and rural areas may benefit greatly from the development of interventions that are delivered online. Services may be offered more easily to MSM over a large territory with fewer issues in regard to recruitment since men do not need to be visible in the community to take advantage of services. Additionally, interventions may be a low cost alternative due to increased efficiency for recruitment and service delivery that tap into the vast and growing virtual community of MSM (Rosser et al., 2011).

However, the startup costs for interventions that can engage a technology-savvy group such as MSM will require additional funding for the development of programs that are designed for the strengths of emerging technological advances (Rosser et al., 2011). Notably, recent research studies about sexual activity with MSM has discussed the importance of increased efforts to do online HIV prevention, especially in rural communities (Kakietek et al., 2011; Rosser et al., 2011; Rosenberger et al., 2011; Horvath et al., 2006). Currently, funding for low incidence states does not direct dollars

towards the development of online HIV prevention interventions, as discussed. The lack of funding raises doubts about the ability to pursue the development of these interventions in rural states given the start-up costs.

Rosenberger and colleagues (2011) called for increased collaboration of MSM-themed dating and hookup sites with HIV-related outreach and interventions conducted online. Such collaboration is a potential way to provide funding and combine efforts to create content and technology that is engaging and sex positive. Additionally, this would allow access to virtual communities of MSM in order to implement interventions as well as opportunities to reach MSM to gather data on the effectiveness of the programs. At the same time, popular sites such as Manhunt and Adam4Adam charge high fees for health outreach on their websites and for research-related advertising and recruitment. Given the drive for profit among Internet dating and sex businesses, establishing collaborations with a shared purpose of improving the sexual health of MSM may prove to be challenging.

Conclusion

The present thesis study adds to the current body of literature by testing variables from the Theory of Planned Behavior with an electronic survey format and online sample of MSM in a Midwestern state. The separation by partner type was an important distinction that allowed for specific models to predict both intentions to use condoms at next sex and action planning for condom use for casual and for main partners. Notably, there were key differences in the predictors by partner type for each model. Also, the incorporation of action planning into the theoretical model provided preliminary evidence for the importance of action planning to the investigation of sexual behavior among MSM. Lastly, an exploratory look at alternative strategies that MSM use in addition to or besides condom use provided further evidence that MSM indeed are using alternative strategies and that these should be investigated in addition to condom use.

Behavioral interventions that target condom use are needed. However, given the present landscape in which condom fatigue is evident (Rowniak, 2009) and alternative strategies for condom use are being used such as serosorting (Hopkins & Rietmeijer, 2007), researchers and practitioners must appreciate the nuanced understanding of MSM about how to reduce risk of HIV during anal sex. While rectal microbicides and pre-exposure prophylaxis may provide alternatives in a few years, the buffet of options to reduce risk that can be presented to MSM would help to ensure that MSM are well-informed about the risks and benefits of various alternative strategies and would support their ability to make decisions about their level of risk.

Furthermore, resiliency and a strengths-based approach must be incorporated more readily into research regarding HIV among MSM. This approach opens new pathways for research and also strongly aligns with the values of social work. The examination of alternative risk reduction strategies and researching the impact of offering options to MSM will expand research knowledge because studies that include these strategies will reflect more closely the reality of the sexual behavior and risk reduction techniques of MSM. Moreover, upholding the ability of MSM to make informed decisions about health illustrates the social work value of self-determination. Self-determination means that individuals are capable of making decisions in contrast to someone, typically with greater power in some capacity, imposing decisions upon the other (NASW, 2008). Research questions that are framed within a resiliency framework and ask what accounts for why most MSM are HIV-negative and continue to thrive in the face of adversity poses new questions for the field (Herrick et al., 2011) and also illustrates the value of dignity and worth of the person (NASW, 2008). Instead of focusing on disease and asking questions that reinforce the stigma related to MSM and HIV, the dignity of MSM is appreciated through the recognition of their strengths and resiliencies. As research framed in this theoretical framework emerges, studies may help to shift the stigma-based and deficits-focused views of MSM in broader society.

The charge to address the HIV syndemic among MSM is central to the value of social workers to pursue social justice (NASW, 2008). In the United States, MSM and African-American women are the most strongly and disproportionately impacted groups (Prejean et al., 2011). The complex factors that drive the syndemic must continue to be investigated. Information-sharing with research and interventions across groups will help to support better outcomes. While MSM and African-American women are distinct groups with unique factors and circumstances that influence their risk as well as their strengths and resiliencies, common themes and strategies may arise that allow mutual improvement. An iterative process, in which research informs practice and practice informs research, would allow increased understanding, reduction in stigma, and potentially more effective interventions to address the syndemic with MSM.

Undoubtedly, the disproportionate impact of HIV on minority, stigmatized groups is a battle cry for social workers at levels of practice ranging from working with individuals and families (i.e. mental health counseling, addressing trauma, treating substance abuse), communities (i.e. fighting homophobia, stigma, ensuring access to culturally competent health care), consuming and contributing to research, to advocating for policy changes at the local, state and federal levels (i.e. supporting anti-bullying policies, same-sex marriage, and funding for HIV prevention and care programs). The field of social work has a unique position to contribute to the fight against the injustice of the disproportionate impact of HIV on minority groups and in which all of the aforementioned elements are pursued in an organized, synthesized effort. The worth and dignity of the MSM community and other oppressed communities will be fully internalized, externalized and upheld through the combined efforts at all levels of practice.

APPENDIX A

EXAMPLES OF RECRUITMENT ADVERTISEMENTS

Facebook Advertisement

Accessline Advertisement

APPENDIX B

ELECTRONIC SURVEY INSTRUMENT

Midwest Men's Sex Survey

Q1 We know that gay and bi men are the only group whose rate of HIV has steadily increased over the last 10 years. We also know that programs that work to reduce the risk of HIV infections among men aren't always as effective as they could be. To change that, we need your help. Researchers at the University of Iowa would appreciate your honest answers to a set of questions about sex and safer sex practices. All information you share is confidential. For most participants, the secure survey should take about 20 minutes to complete. After the survey, you will have the option to enter your personal email address for a chance to win a gift card. Your input is important! Tips for taking the survey: Please note that at any time during the survey, you can save your progress and return later to complete the survey -- each time you click "next" to advance to the next screen, your responses are saved. Use the "back" button at the bottom of each page, rather than the back button on your browser to return to a prior page. First, we have three questions to find out if you're eligible to participate in the survey. If you do NOT wish to continue, you may close your browser window now.

Q2 What is your sex?

- ❍ Male (1)
- ❍ Female (2)
- ❍ Transgender Male to Female (3)
- ❍ Transgender Female to Male (4)

If Female Is Selected, Then Skip To End of SurveyIf Transgender Female to Male Is Selected, Then Skip To End of Survey

Q3 What is your age?

years (1)

If years Is Less Than 18, Then Skip To End of Survey

Q4 In the past 12 months, have you had anal sex with:

- ❍ One or more men only (1)
- ❍ Both men and women (2)
- ❍ One or more women only (3)
- ❍ I have not had anal sex in the past 12 months (4)

If One or more women only Is Selected, Then Skip To End of SurveyIf I have not had sex in the p... Is Selected, Then Skip To End of Survey

Q5 Project Title: Midwest Men's Sex Survey Principal Investigator: Gregory Gross, B.S., B.A., M.S.W. candidate Faculty Advisor: Jeanne Saunders, M.S.S.W., Ph.D. Research Team Contact: Gregory Gross, email at gregory-gross@uiowa.edu We invite you to participate in a research study. The purpose of the study is to understand the factors related to safe sex practices with male partners. The study will recruit 500 adult men living in Iowa and surrounding Midwestern states to gather information about attitudes and practices related to condom use and other strategies used to reduce the risk of getting or transmitting HIV. This information will help us understand the reality of sexual practices and attitudes among men in order to develop programs that reduce the spread of HIV. If you agree to participate by clicking "Yes, I agree" at the bottom of this page, you will be asked to answer questions in a computer-based survey format. The online survey will take approximately 15-25 minutes to complete. Your participation is completely voluntary. You may choose not to take part at all by clicking "No, I do not agree" at the bottom of this page. If you decide to be in this study, you may stop participating at any time by simply closing your web browser. You are free to skip any questions that you prefer not to answer. If you don't answer a question or if you want to stop filling out the survey at any time, you may do so without penalty. We will keep the information you provide confidential, however federal regulatory agencies and the University of Iowa Institutional Review Board (a committee that reviews and approves research studies) may inspect and copy records pertaining to this research. To help protect your confidentiality, we will ensure that information that is collected will not be linked to any identifying information. The only identifying information that will be collected is your zip code and IP address. Your responses will not be linked to your website profile or Facebook page. When we write a report about this study we will do so in such a way that you cannot be identified. There are no known risks from being in this study, and you will not benefit personally. However, we hope that, in the future, other people might benefit from the findings used to develop programs that can help reduce the spread of HIV. This project is funded by the AIDS Project of Central Iowa. Data from this study will be used in the design of a larger community-based HIV prevention project. You will not have any costs for being in this research study. You will not be paid for being in this research study. However, you will be entered into a drawing to receive one of 20 gift cards in the amount of $20 to

Amazon.com. After reaching the end of the survey, you will be asked to provide your email address in the entry form. You may participate in this study without providing your email address and without entering the drawing. The drawing will be held at the end of the study. We will contact the winners at the email addresses they provided. Instructions and information on retrieving the gift card at Amazon.com will be sent to them from the email address, gregory-gross@uiowa.edu. Taking part in this research study is completely voluntary. If you decide not to be in this study, or if you stop participating at any time, you won't be penalized or lose any benefits for which you otherwise qualify. If you have any questions about the research study itself, please contact Gregory Gross at gregory-gross@uiowa.edu. If you have questions about the rights of research subjects, please contact the Human Subjects Office, 105 Hardin Library for the Health Sciences, 600 Newton Rd, The University of Iowa, Iowa City, IA 52242-1098, (319) 335-6564, or e-mail irb@uiowa.edu. To offer input about your experiences as a research subject or to speak to someone other than the research staff, call the Human Subjects Office at the number above. Thank you very much for your consideration. Sincerely, Gregory Gross

Q6 Please click the link below to save and/or print a copy of this letter for your records.

Q7 The consent form above is a written explanation of what will happen during the study if you decide to participate. You are not waiving any legal rights by agreeing to participate. If you agree to the above information and would like to participate in this study, please click on "Yes, I agree" below.

- ❍ Yes, I agree (1)
- ❍ No, I do not agree (2)

If I do NOT agree Is Selected, Then Skip To End of Survey

Q8 What racial group do you consider yourself to be in? (Check all that apply.)

- ❑ Asian/Pacific Islander (1)
- ❑ Black/African-American (2)
- ❑ White/Caucasian (3)
- ❑ Native American/Alaska Native (4)
- ❑ Multi-Racial (5)
- ❑ Other (please specify) (6) _____

Q9 Do you consider yourself to be Hispanic or Latino?

- Yes (1)
- No (2)
- Don't know (3)

Q10 How would you describe the town or community where you live?

- A rural area or small town (under 5,000 people) (1)
- A small city (5,000-50,000 people - for example Harlan, Algona, Creston, Clinton) (2)
- A larger city (50,000+ people - for example Cedar Rapids, Des Moines, Quad Cities area, Council Bluffs/Omaha) (3)

Answer If How would you describe the town or community where you live? A rural area or small town (under 5,000 people) Is Selected Or How would you describe the town or community where you live? A small city (5,000-50,000 people - for example Harlan, Algona, Creston, Clinton) Is Selected

Q11 Do you live within 30 minutes drive of a larger city (population of 50,000 or more), for example Cedar Rapids, Des Moines, Davenport, Sioux City?

- Yes (1)
- No (2)

Q12 What is your zip code?

zip code (1)

Q13 What is the highest grade in school you completed?

- Graduate or Professional degree (1)
- Bachelor's degree (2)
- Some college, Associate's degree, and/or technical school (3)
- High school or GED (4)
- Some high school (5)
- Less than high school (6)
- Never attended school (7)

Q14 What is your approximate income per year?

- ❍ $0 - $10,000 (1)
- ❍ $10,001 - $20,000 (2)
- ❍ $20,001 - $30,000 (3)
- ❍ $30,001 - $40,000 (4)
- ❍ $40,001 - $50,000 (5)
- ❍ $50,001 - $60,000 (6)
- ❍ more than $60,000 (7)

Q15 Do you think of yourself as:

- ❍ Heterosexual or "Straight" (1)
- ❍ Gay or Homosexual (2)
- ❍ Bisexual (3)
- ❍ Other (please specify) (4) _____

Q16 Which of the following do you most identify as?

- ❍ Top (1)
- ❍ Versatile/Top (2)
- ❍ Versatile (3)
- ❍ Versatile/Bottom (4)
- ❍ Bottom (5)
- ❍ Other (please specify) (6) _____

Q17 What's your current HIV status?

- ❍ HIV negative (1)
- ❍ HIV positive (2)
- ❍ I don't know my current HIV status (3)

Q18 Please think back over the past 7 days. Approximately how many hours per day, on average, did you spend actively using the Internet to look for potential romantic male partners?

Number of hours (1)

Q19 Please think back over the past 7 days. Approximately how many hours per day, on average, did you spend actively using the Internet to look for sex with men?

Number of hours (1)

Q20 In the past 12 months, what websites or apps have you used to look for sex with other men? (Select all that apply.)

- ❑ SilverDaddies (1)
- ❑ D-List (2)
- ❑ Squirt.org (3)
- ❑ I don't use the Internet to look for sex (4)
- ❑ BarebackRT.com (5)
- ❑ Bareback.com (6)
- ❑ BlackGayChat (7)
- ❑ Facebook (8)
- ❑ Grindr (9)
- ❑ Adam4Adam (10)
- ❑ Craigslist (11)
- ❑ Gay.com (12)
- ❑ Manhunt (13)
- ❑ DudesNude (14)
- ❑ Other (please specify) (15) _____

Q21 The following questions ask about your recent sexual activity. Please remember that your responses are confidential. You may refuse to answer any question that makes you uncomfortable. You can stop at any time and come back to complete the survey at any point.

Q22 During the past 12 months, how many different men have you had anal sex with? (Estimates are OK if you don't remember the exact number.)

men (1)

If men Is Equal to 0, Then Skip To End of Survey

Q23 Condoms are a very effective way for sexually active men to avoid getting HIV. Some men may use other ways to try to reduce risk which may or may not be effective. Please indicate how often you've used each of the items on the list of other strategies besides condoms in the past 12 months to try to reduce risk of getting HIV. If a certain item doesn't apply to you, select "Not Applicable".

	Never (1)	Rarely (2)	Sometimes (3)	Usually (4)	Always (5)	Not Applicable (6)
I only have anal sex with a sex partner of the same HIV status as me (serosorting) (1)	❍	❍	❍	❍	❍	❍
I develop trust with a partner (get to know him) before having anal sex (2)	❍	❍	❍	❍	❍	❍
I reduce the number of sex partners I have anal sex with (3)	❍	❍	❍	❍	❍	❍
I loosen up my or my sex partner's rectum (ass) with a finger or object prior to penetration (4)	❍	❍	❍	❍	❍	❍
I only have oral sex with my sex partner(s) (5)	❍	❍	❍	❍	❍	❍
I or my sex partner use withdrawal (pulling out)	❍	❍	❍	❍	❍	❍

prior to ejaculation when having anal sex (6)						
I avoid having anal sex with anonymous sex partners (7)	❍	❍	❍	❍	❍	❍
I ask every sex partner the last time he was tested for HIV (8)	❍	❍	❍	❍	❍	❍
I use plenty of lube when having anal sex (9)	❍	❍	❍	❍	❍	❍
I avoid douching prior to being the receptive anal sex partner (bottom) (10)	❍	❍	❍	❍	❍	❍
I ask every sex partner about his HIV status (11)	❍	❍	❍	❍	❍	❍
I have a mutually monogamous relationship (both partners only have sex with each other) (12)	❍	❍	❍	❍	❍	❍
I get tested regularly for HIV (13)	❍	❍	❍	❍	❍	❍
I avoid rough anal sex (14)	❍	❍	❍	❍	❍	❍

I only have anal sex without a condom when I'm the insertive partner (top) (15)	❍	❍	❍	❍	❍	❍
When I have an HIV positive sex partner, I avoid having anal sex without a condom when his viral load is not undetectable. (16)	❍	❍	❍	❍	❍	❍
If I am HIV positive, I avoid having anal sex without a condom when my viral load is not undetectable. (17)	❍	❍	❍	❍	❍	❍
Other (please specify) (18)	❍	❍	❍	❍	❍	❍
Other(please specify) (19)	❍	❍	❍	❍	❍	❍

Q24 In the past 12 months, have you had anal sex when you were drunk on alcohol?

- ❍ Yes (1)
- ❍ No (2)

Q25 In the past 12 months, have you had anal sex when you used other drugs (such as poppers, crystal meth, ecstasy, marijuana)?

- ❍ Yes (1)
- ❍ No (2)

Answer If In the past 12 months, have you had anal sex when yo... Yes Is Selected

Q26 In the past 12 months, which drugs have you used when you've had anal sex?

- ❑ Marijuana ("pot") (1)
- ❑ Poppers (amyl nitrates) (2)
- ❑ Crystal meth ("meth", "tina") (3)
- ❑ Erection-enhancing drugs (such as Viagra, Cialis, Levitra) (6)
- ❑ Prescription pain killers (10)
- ❑ Ecstasy (4)
- ❑ Heroin (5)
- ❑ Special K (ketamine) (8)
- ❑ GHB (gamma hydroxybutyrate) (9)
- ❑ Other (please specify) (7) _____

Q27 Think about your main partner(s) in the past 12 months. A main partner is someone that you feel committed to above all others -- this is someone you might call your boyfriend, significant other, life partner, or husband.Of the men you had anal sex with in the past 12 months, how many were main partners?

main partner(s) (1)

If main partner(s) Is Equal to 0, Then Skip To Think about your casual partner(s) ...

Q28 Of the main partner(s) you had anal sex with in the past 12 months, how many did you have unprotected anal sex with? (This means that you or your main partner(s) did not use a condom at any time during sex.)

main partner(s) (1)

Q29 Please indicate approximately how long you've been "seeing" your current or most recent main partner. (Round to the nearest year. For example, if you've been seeing your partner for 8 months, indicate "1" below.)

years (1)

Q30 Think about your casual partner(s) in the past 12 months. A casual partner is someone that you do not feel committed to above all others.Of the men you had anal sex with in the past 12 months, how many were casual partners?

casual partner(s) (1)

If casual partner(s) Is Equal to 0, Then Skip To End of Block

Q31 Of the casual partner(s) you had anal sex with in the past 12 months, how many did you have unprotected anal sex with? (This means that you or your casual partner(s) did not use a condom at any time during sex.)

casual partner(s) (1)

Q32 You indicated that you've had at least one casual partner within the past 12 months. The next set of questions will ask you about using a condom for anal sex with a casual partner. You may or may not use condoms with your casual partner(s). Either way, your opinions are important to understanding thoughts and attitudes about using condoms with casual partners.Please answer the following questions carefully and honestly. To select a response, simply click on the circle that corresponds to the answer that's most true for you. While a few questions may appear to be similar, each question is included purposefully.

Q33 How often do you use a condom when you have anal sex with a casual partner?

- ❍ Every time (1)
- ❍ Almost every time (2)
- ❍ Sometimes (3)
- ❍ Almost never (4)
- ❍ Never (5)

Answer If How often do you use a condom when you have anal sex with... Every time Is Selected

Q34 How long have you been using a condom every time when you have anal sex with a casual partner?

- ❍ 6 months or more (1)
- ❍ Less than 6 months (2)

Answer If How often do you use a condom when you have anal sex with... Every time Is Not Selected

Q35 How likely is it that in the next 6 months you will start using a condom every time you have anal sex with a casual partner?

- ❍ Very Likely (1)
- ❍ Somewhat Likely (2)
- ❍ Somewhat Unlikely (3)
- ❍ Very Unlikely (4)

Q36 Please answer the following questions about how positively or negatively you view using a condom for anal sex with a casual partner.

	1 (1)	2 (2)	3 (3)	4 (4)	5 (5)	6 (6)	7 (7)
Harmful:Beneficial (1)	❍	❍	❍	❍	❍	❍	❍
Pleasant:Unpleasant (2)	❍	❍	❍	❍	❍	❍	❍
Difficult:Easy (3)	❍	❍	❍	❍	❍	❍	❍
Good:Bad (4)	❍	❍	❍	❍	❍	❍	❍
Wise:Unwise (5)	❍	❍	❍	❍	❍	❍	❍

Q37 Please indicate your intention to use a condom for anal sex with a casual partner next time:

	Strongly Disagree (1)	Moderately Disagree (2)	Slightly Disagree (3)	Neutral (4)	Slightly Agree (5)	Moderately Agree (6)	Strongly Agree (7)
I intend to use a condom for anal sex with a casual partner next time. (1)	❍	❍	❍	❍	❍	❍	❍

Q38 The following questions will ask you about a few advantages and disadvantages of using a condom for anal sex with a casual partner. Please indicate how much you agree or disagree with each statement. Using a condom for anal sex with a casual partner would:

	Strongly Disagree (1)	Moderately Disagree (2)	Slightly Disagree (3)	Neutral (4)	Slightly Agree (5)	Moderately Agree (6)	Strongly Agree (7)
remind me too much of AIDS. (1)	❍	❍	❍	❍	❍	❍	❍
be a lot of trouble. (2)	❍	❍	❍	❍	❍	❍	❍
make me feel cleaner. (3)	❍	❍	❍	❍	❍	❍	❍
make sex less intimate. (4)	❍	❍	❍	❍	❍	❍	❍
make sex less spontaneous. (5)	❍	❍	❍	❍	❍	❍	❍
protect from STDs. (6)	❍	❍	❍	❍	❍	❍	❍
make me worry less. (7)	❍	❍	❍	❍	❍	❍	❍
protect from AIDS. (8)	❍	❍	❍	❍	❍	❍	❍

Q39 Now please rate whether you expect to use a condom the next time you have anal sex with a casual partner.

	Strongly Disagree (1)	Moderately Disagree (2)	Slightly Disagree (3)	Neutral (4)	Slightly Agree (5)	Moderately Agree (6)	Strongly Agree (7)
I expect to use a condom the next time I have anal sex with a casual partner. (1)	❍	❍	❍	❍	❍	❍	❍

Q40 This section contains questions that concern what other people you know think about using a condom for anal sex with a casual partner. First, answer a few general questions:

	Strongly Disagree (1)	Moderately Disagree (2)	Moderately Agree (9)	Strongly Agree (10)			
Most people who are important to me think that I should use a condom for anal sex with a casual partner. (1)	❍	❍	❍	❍	❍	❍	❍
Generally speaking, I want to do what most people who are important to me think I should do. (2)	❍	❍	❍	❍	❍	❍	❍
Most people who are important to me would be disappointed if I did not use a condom for anal sex with a casual partner. (3)	❍	❍	❍	❍	❍	❍	❍
Most people who are important to me expect me to use a condom for anal sex with a casual partner. (4)	❍	❍	❍	❍	❍	❍	❍

Q41 Now provide more specific ratings about particular groups or individuals whose opinions may be important to you. If a particular group or individual does not exist for you (such as you don't have potential sex partners), then leave that question blank.

	Strongly Disagree (1)	Moderately Disagree (2)	Slightly Disagree (3)	Neutral (4)	Slightly Agree (5)	Moderately Agree (6)	Strongly Agree (7)
My friends think I should use a condom for anal sex with a casual partner. (1)	❍	❍	❍	❍	❍	❍	❍
My potential sex partners think I should use a condom for anal sex with a casual partner. (2)	❍	❍	❍	❍	❍	❍	❍
Most gay and bi men think I should use a condom for anal sex with a casual partner. (3)	❍	❍	❍	❍	❍	❍	❍
My friends' approval is important to me . (4)	❍	❍	❍	❍	❍	❍	❍
My potential sex partners' approval is important to me. (5)	❍	❍	❍	❍	❍	❍	❍
Most gay and bi men's approval is important to me. (6)	❍	❍	❍	❍	❍	❍	❍

Q42

	Strongly Disagree (1)	Moderately Disagree (2)	Slightly Disagree (3)	Neutral (4)	Slightly Agree (5)	Moderately Agree (6)	Strongly Agree (7)
Most of my friends use a condom for anal sex with a casual partner. (1)	❍	❍	❍	❍	❍	❍	❍
Most of my potential sex partners use a condom for anal sex with a casual partner. (2)	❍	❍	❍	❍	❍	❍	❍
Most gay and bi men use a condom for anal sex with a casual partner. (3)	❍	❍	❍	❍	❍	❍	❍

Q43 Please indicate your level of agreement with each of the statements that follow.

	Strongly Disagree (1)	Moderately Disagree (2)	Slightly Disagree (3)	Neutral (4)	Slightly Agree (5)	Moderately Agree (6)	Strongly Agree (7)
For me to use a condom for anal sex with a casual partner will be difficult. (1)	❍	❍	❍	❍	❍	❍	❍
I can overcome any obstacles or problems that could prevent me from using a condom with a casual partner if I want to. (2)	❍	❍	❍	❍	❍	❍	❍
I have complete control over using a condom for anal sex with a casual partner. (3)	❍	❍	❍	❍	❍	❍	❍
It is mostly up to me whether or not I use a condom for anal sex with a casual partner. (4)	❍	❍	❍	❍	❍	❍	❍

Q44 Now please indicate how determined you are to use a condom for anal sex with a casual partner next time.

	Strongly Disagree (1)	Moderately Disagree (2)	Slightly Disagree (3)	Neutral (4)	Slightly Agree (5)	Moderately Agree (6)	Strongly Agree (7)
I'm determined to use a condom the next time I have anal sex with a casual partner. (1)	❍	❍	❍	❍	❍	❍	❍

Q45 The following questions ask about how certain you are that you can use a condom for anal sex with a casual partner in some different situations.

	Definitely Not (1)	Probably Not (2)	Uncertain (3)	Probably Yes (4)	Definitely Yes (5)
Can you put a condom on without spoiling the mood? (1)	❍	❍	❍	❍	❍
Can you use a condom even if you are with a person you're in love with? (2)	❍	❍	❍	❍	❍
Can you use a condom regularly even if a partner might think less of you? (3)	❍	❍	❍	❍	❍
Can you stop and look for condoms when you are sexually aroused? (4)	❍	❍	❍	❍	❍
Can you use a condom regularly even when you're under the influence of alcohol or drugs? (5)	❍	❍	❍	❍	❍
Can you use a condom regularly even when your partner is	❍	❍	❍	❍	❍

under the influence of alcohol or drugs? (6)					
Can you use a condom regularly when the time to have sex is limited (for a quickie)? (7)	❍	❍	❍	❍	❍
If you're unsure about your partner's opinion about using condoms, can you suggest using one? (8)	❍	❍	❍	❍	❍
Can you use a condom if your partner does not want to use one? (9)	❍	❍	❍	❍	❍
Can you insist on condom use when the person you are with appears clean and decent? (10)	❍	❍	❍	❍	❍
Can you use a condom even when a partner says he has no infectious diseases? (11)	❍	❍	❍	❍	❍
Can you	❍	❍	❍	❍	❍

continue to insist on using a condom with a person who gets angry when you suggest it? (12)					
Can you suggest using condoms with a partner even if they will think that you have a sexually transmitted disease? (13)	❍	❍	❍	❍	❍

Q46 Now please answer one more question about whether you will use a condom the next time you have anal sex with a casual partner.

	Strongly Disagree (1)	Moderately Disagree (2)	Slightly Disagree (3)	Neutral (4)	Slightly Agree (5)	Moderately Agree (6)	Strongly Agree (7)
All things considered, I might not use a condom the next time I have anal sex with a casual partner. (1)	❍	❍	❍	❍	❍	❍	❍

Q47 The following questions ask about the extent to which you have planned several actions related to anal sex with a casual partner within the last 12 months.I have a clear plan about:

	Strongly Disagree (1)	Moderately Disagree (2)	Slightly Disagree (3)	Neutral (4)	Slightly Agree (5)	Moderately Agree (6)	Strongly Agree (7)
A good way of bringing up the issue of condom use with a casual partner (1)	❍	❍	❍	❍	❍	❍	❍
When to bring up the issue of condom use with a casual partner (2)	❍	❍	❍	❍	❍	❍	❍
Where to get a condom during the evening (3)	❍	❍	❍	❍	❍	❍	❍
A good way of suggesting using a condom to a casual partner (4)	❍	❍	❍	❍	❍	❍	❍
What you would say if a casual partner was reluctant to use a condom (5)	❍	❍	❍	❍	❍	❍	❍
Where to get a condom during the day (6)	❍	❍	❍	❍	❍	❍	❍
How to overcome a casual partner's reluctance to use a condom (7)	❍	❍	❍	❍	❍	❍	❍
That you would not have anal sex unless	❍	❍	❍	❍	❍	❍	❍

a casual partner agreed to use a condom (8)							
At what point a condom would be put on (9)	❍	❍	❍	❍	❍	❍	❍
How to indicate that it's time to put a condom on now (10)	❍	❍	❍	❍	❍	❍	❍
Whether you or your casual partner would put the condom on the penis (11)	❍	❍	❍	❍	❍	❍	❍

Q48 You indicated that you've had a main partner within the past 12 months. The next set of questions will you ask you about using a condom for anal sex with a main partner. (If you are no longer with your main partner, think about your most recent main partner.) Depending on your relationship, you may or may not use condoms with your main partner. Either way, your opinions are important to understanding thoughts and attitudes about using condoms with a main partner. Please answer the following questions carefully and honestly. To select a response, simply click on the circle that corresponds to the answer that's most true for you. While a few questions may appear to be similar, each question is included purposefully.

Q49 How often do you use a condom when you have anal sex with a main partner?

- ❍ Every time (1)
- ❍ Almost every time (2)
- ❍ Sometimes (3)
- ❍ Almost never (4)
- ❍ Never (5)

Answer If How often do you use a condom when you have anal sex with... Every time Is Selected

Q50 How long have you been using a condom every time when you have anal sex with a main partner?

- ❍ 6 months or more (1)
- ❍ Less than 6 months (2)

Answer If How often do you use a condom when you have anal sex with... Every time Is Not Selected

Q51 How likely is it that in the next 6 months you will start using a condom every time you have anal sex with a main partner?

- ❍ Very Likely (1)
- ❍ Somewhat Likely (2)
- ❍ Somewhat Unlikely (3)
- ❍ Very Unlikely (4)

Q52 Please answer the following questions about how positively or negatively you view using a condom for anal sex with a main partner.

	1 (1)	2 (2)	3 (3)	4 (4)	5 (5)	6 (6)	7 (7)
Harmful:Beneficial (1)	❍	❍	❍	❍	❍	❍	❍
Pleasant:Unpleasant (2)	❍	❍	❍	❍	❍	❍	❍
Difficult:Easy (3)	❍	❍	❍	❍	❍	❍	❍
Good:Bad (4)	❍	❍	❍	❍	❍	❍	❍
Wise:Unwise (5)	❍	❍	❍	❍	❍	❍	❍

Q53 Please indicate your intention to use a condom for anal sex with a main partner next time:

	Strongly Disagree (1)	Moderately Disagree (2)	Slightly Disagree (3)	Neutral (4)	Slightly Agree (5)	Moderately Agree (6)	Strongly Agree (7)
I intend to use a condom for anal sex with a main partner next time. (1)	❍	❍	❍	❍	❍	❍	❍

Q54 The following questions will ask you about a few advantages and disadvantages of using a condom for anal sex with a main partner. Please indicate how much you agree or disagree with each statement. Using a condom for anal sex with my main partner would:

	Strongly Disagree (1)	Moderately Disagree (2)	Slightly Disagree (3)	Neutral (4)	Slightly Agree (5)	Moderately Agree (6)	Strongly Agree (7)
make sex less spontaneous. (1)	❍	❍	❍	❍	❍	❍	❍
show my partner that I care. (2)	❍	❍	❍	❍	❍	❍	❍
make my partner think I might "play around". (3)	❍	❍	❍	❍	❍	❍	❍
protect from AIDS. (4)	❍	❍	❍	❍	❍	❍	❍
be the responsible thing to do. (5)	❍	❍	❍	❍	❍	❍	❍
be less enjoyable. (6)	❍	❍	❍	❍	❍	❍	❍
protect from STDs. (7)	❍	❍	❍	❍	❍	❍	❍
make sex less intimate. (8)	❍	❍	❍	❍	❍	❍	❍

Q55 Now please rate whether you expect to use a condom the next time you have anal sex with a main partner.

	Strongly Disagree (1)	Moderately Disagree (2)	Slightly Disagree (3)	Neutral (4)	Slightly Agree (5)	Moderately Agree (6)	Strongly Agree (7)
I expect to use a condom the next time I have anal sex with a main partner. (1)	❍	❍	❍	❍	❍	❍	❍

Q56 This section contains questions that concern what other people you know think about using a condom for anal sex with a main partner. First, answer a few general questions:

	Strongly Disagree (1)	Moderately Disagree (2)	Moderately Agree (9)	Strongly Agree (10)			
Most people who are important to me think that I should use a condom for anal sex with a main partner. (1)	❍	❍	❍	❍	❍	❍	❍
Generally speaking, I want to do what most people who are important to me think I should do. (2)	❍	❍	❍	❍	❍	❍	❍
Most people who are important to me would be disappointed if I did not use a condom for anal sex with a main partner. (3)	❍	❍	❍	❍	❍	❍	❍
Most people who are important to me expect me to use a condom for anal sex with a main partner. (4)	❍	❍	❍	❍	❍	❍	❍

Q57 Now provide more specific ratings about particular groups or individuals whose opinions may be important to you. If a particular group or individual does not apply to you, leave the item blank.

	Strongly Disagree (1)	Moderately Disagree (2)	Slightly Disagree (3)	Neutral (4)	Slightly Agree (5)	Moderately Agree (6)	Strongly Agree (7)
My friends think I should use a condom for anal sex with a main partner. (1)	❍	❍	❍	❍	❍	❍	❍
My potential sex partners think I should use a condom for anal sex with a main partner. (2)	❍	❍	❍	❍	❍	❍	❍
My family thinks I should use a condom for anal sex with a main partner. (3)	❍	❍	❍	❍	❍	❍	❍
My friends' approval is important	❍	❍	❍	❍	❍	❍	❍

to me. (4)							
My potential sex partners' approval is important to me. (5)	❍	❍	❍	❍	❍	❍	❍
My family's approval is important to me. (6)	❍	❍	❍	❍	❍	❍	❍

Q58

	Strongly Disagree (1)	Moderately Disagree (2)	Slightly Disagree (3)	Neutral (4)	Slightly Agree (5)	Moderately Agree (6)	Strongly Agree (7)
Most of my friends use a condom for anal sex with a main partner. (1)	❍	❍	❍	❍	❍	❍	❍
Most of my potential sex partners use a condom for anal sex with a main partner. (2)	❍	❍	❍	❍	❍	❍	❍

Q59 Please indicate your level of agreement with each of the statements that follow.

	Strongly Disagree (1)	Moderately Disagree (2)	Slightly Disagree (3)	Neutral (4)	Slightly Agree (5)	Moderately Agree (6)	Strongly Agree (7)
For me to use a condom for anal sex with a main partner will be difficult. (1)	❍	❍	❍	❍	❍	❍	❍
I can overcome any obstacles or problems that could prevent me from using a condom with a main partner if I want to. (2)	❍	❍	❍	❍	❍	❍	❍
I have complete control over using a condom for anal sex with a main partner. (3)	❍	❍	❍	❍	❍	❍	❍
It is mostly up to me whether	❍	❍	❍	❍	❍	❍	❍

or not I use a condom for anal sex with a main partner. (4)							

Q60 Now please indicate how determined you are to use a condom for anal sex with a main partner next time.

	Strongly Disagree (1)	Moderately Disagree (2)	Slightly Disagree (3)	Neutral (4)	Slightly Agree (5)	Moderately Agree (6)	Strongly Agree (7)
I'm determined to use a condom the next time I have anal sex with a main partner. (1)	❍	❍	❍	❍	❍	❍	❍

Q61 The following questions ask about how certain you are that you can use a condom for anal sex with a main partner in some different situations.

	Definitely Not (1)	Probably Not (2)	Uncertain (3)	Probably Yes (4)	Definitely Yes (5)
Can you use a condom with a long-time partner? (1)	❍	❍	❍	❍	❍
Can you use a condom regularly when the time to have sex is limited (for a quickie)? (2)	❍	❍	❍	❍	❍
Can you use a condom even if you are with a person you're in love with? (3)	❍	❍	❍	❍	❍
Can you use a condom regularly even when you're under the influence of alcohol or drugs? (4)	❍	❍	❍	❍	❍
Can you stop and look for condoms when you are sexually aroused? (5)	❍	❍	❍	❍	❍
Can you use a condom regularly even when your	❍	❍	❍	❍	❍

partner is under the influence of alcohol or drugs? (6)					
Can you use a condom regularly even if a partner might think less of you? (7)	❍	❍	❍	❍	❍
Can you use a condom if your partner does not want to use one? (8)	❍	❍	❍	❍	❍
Can you continue to insist on using a condom with a person who gets angry when you suggest it? (9)	❍	❍	❍	❍	❍
Can you suggest using condoms with a partner even if they will think that you have a sexually transmitted disease? (10)	❍	❍	❍	❍	❍
Can you put a condom on without spoiling the mood? (11)	❍	❍	❍	❍	❍
Can you use a	❍	❍	❍	❍	❍

condom even when a partner says he has no infectious diseases? (12)					
If you're unsure about your partner's opinion about using condoms, can you suggest using one? (13)	❍	❍	❍	❍	❍

Q62 Now please answer one more question about whether you will use a condom the next time you have anal sex with a main partner.

	Strongly Disagree (1)	Moderately Disagree (2)	Slightly Disagree (3)	Neutral (4)	Slightly Agree (5)	Moderately Agree (6)	Strongly Agree (7)
All things considered, I might not use a condom the next time I have anal sex with a main partner. (1)	❍	❍	❍	❍	❍	❍	❍

Q63 The following questions ask about the extent to which you have planned several actions related to anal sex with a main partner within the last 12 months.I have a clear plan about:

	Strongly Disagree (1)	Moderately Disagree (2)	Slightly Disagree (3)	Neutral (4)	Slightly Agree (5)	Moderately Agree (6)	Strongly Agree (7)
A good way of bringing up the issue of condom use with a main partner (1)	❍	❍	❍	❍	❍	❍	❍
When to bring up the issue of condom use with a main partner (2)	❍	❍	❍	❍	❍	❍	❍
Where to get a condom during the evening (3)	❍	❍	❍	❍	❍	❍	❍
A good way of suggesting using a condom to a main partner (4)	❍	❍	❍	❍	❍	❍	❍
What you would say if a main partner was reluctant to use a	❍	❍	❍	❍	❍	❍	❍

condom (5)							
Where to get a condom during the day (6)	❍	❍	❍	❍	❍	❍	❍
How to overcome a main partner's reluctance to use a condom (7)	❍	❍	❍	❍	❍	❍	❍
That you would not have anal sex unless a main partner agreed to use a condom (8)	❍	❍	❍	❍	❍	❍	❍
At what point a condom would be put on (9)	❍	❍	❍	❍	❍	❍	❍
How to indicate that it's time to put a condom on now (10)	❍	❍	❍	❍	❍	❍	❍
Whether you or your main partner would put	❍	❍	❍	❍	❍	❍	❍

the condom on the penis (11)							

APPENDIX C

INFORMED CONSENT LETTER

Project Title: Midwest Men's Sex Survey

Principal Investigator: Gregory Gross, B.S., B.A., M.S.W. candidate

Faculty Advisor: Jeanne Saunders, M.S.S.W., Ph.D.

Research Team Contact: Gregory Gross, email at gregory-gross@uiowa.edu

We invite you to participate in a research study. The purpose of the study is to understand the factors related to safe sex practices with male partners. The study will recruit 500 adult men living in Iowa and surrounding Midwestern states to gather information about attitudes and practices related to condom use and other strategies used to reduce the risk of getting or transmitting HIV. This information will help us understand the reality of sexual practices and attitudes among men in order to develop programs that reduce the spread of HIV.

If you agree to participate by clicking "Yes, I agree" at the bottom of this page, you will be asked to answer questions in a computer-based survey format. The online survey will take approximately 15-25 minutes to complete. Your participation is completely voluntary. You may choose not to take part at all by clicking "No, I do not agree" at the bottom of this page. If you decide to be in this study, you may stop participating at any time by simply closing your web browser. You are free to skip any questions that you prefer not to answer. If you don't answer a question or if you want to stop filling out the survey at any time, you may do so without penalty.

We will keep the information you provide confidential, however federal regulatory agencies and the University of Iowa Institutional Review Board (a committee that reviews and approves research studies) may inspect and copy records pertaining to this research. To help protect your confidentiality, we will ensure that information that is collected will not be linked to any identifying information. The only identifying information that will be collected is your zip code and IP address. Your responses will not be linked to your website profile or Facebook page. When we write a report about this study we will do so in such a way that you cannot be identified.

There are no known risks from being in this study, and you will not benefit personally. However, we hope that, in the future, other people might benefit from the findings used to develop programs that can help reduce the spread of HIV. This project is funded by

the AIDS Project of Central Iowa. Data from this study will be used in the design of a larger community-based HIV prevention project.

You will not have any costs for being in this research study.

You will not be paid for being in this research study. However, you will be entered into a drawing to receive one of 20 gift cards in the amount of $20 to Amazon.com. After reaching the end of the survey, you will be asked to provide your email address in the entry form. You may participate in this study without providing your email address and without entering the drawing. The drawing will be held at the end of the study. We will contact the winners at the email addresses they provided. Instructions and information on retrieving the gift card at Amazon.com will be sent to them from the email address, gregory-gross@uiowa.edu.

Taking part in this research study is completely voluntary. If you decide not to be in this study, or if you stop participating at any time, you won't be penalized or lose any benefits for which you otherwise qualify.

If you have any questions about the research study itself, please contact Gregory Gross at gregory-gross@uiowa.edu. If you have questions about the rights of research subjects, please contact the Human Subjects Office, 105 Hardin Library for the Health Sciences, 600 Newton Rd, The University of Iowa, Iowa City, IA 52242-1098, (319) 335-6564, or e-mail irb@uiowa.edu. To offer input about your experiences as a research subject or to speak to someone other than the research staff, call the Human Subjects Office at the number above.

Thank you very much for your consideration.

Sincerely,

Gregory Gross

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