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A Syndemic Analysis of Depression Among a Sample of Men Who Have Sex with Men in Shanghai, China

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An abstract of
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Abstract

A Syndemic Analysis of Depression Among a Sample of
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By Jessica A. Harnisch

Background: Chinese men who have sex with men (MSM) and male commercial sex workers (money boys) remain an under-researched population, and are undertreated for depression. Additionally, it has been found that MSM and money boys in Shanghai, China experience a high prevalence of male-on-male intimate partner violence (IPV), drug use, and risky sexual behavior. This study aims to examine the syndemic production of depression due to the synergistic interactions of these psychosocial correlates.

Methods: This is a secondary data analysis of the Shanghai Men's Study, in which three recruitment methods; respondent driven sampling (RDS), community popular opinion leader (CPOL), and venue-based sampling (VBS), were utilized to sample 631 money boys and 721 general MSM (N=1,352). Participants completed a paper survey, and self-reported their demographics, number of sexual partners, held gender role beliefs, experience of abuse from a male sexual partner, drug use, and completed the 12-item CES-D depression screening questionnaire. Analysis was conducted by calculating descriptive statistics for all survey items, and significant differences between money boys, general MSM, and participants from the each three recruitment methods were determined by ANOVAs and Chi-square tests. Multivariate logistics regressions were conducted to assess the association between demographic variables, psychosocial variables, and drug use.

Results: Overall, 392 (29%) of the participants exhibited somewhat elevated to very elevated depressive symptoms. A significantly higher portion of money boys (63.5%) had experience one or two forms of abuse from a male sexual partner than general MSM (29.7%, $p<.001$). Money boys also had more male sexual partners than general MSM ($p<.001$), with 43.9% of money boys having more than ten male sexual partners in the last 30 days. Multivariate logistic regressions did not reveal any significant associations between depression and the psychosocial correlates.

Conclusions: We cannot conclude that there is a syndemic production of depression among MSM in Shanghai, China. However, this population is at risk of depression, violent relationships, risky sexual behavior, and substance abuse problems. Because these risks exist, especially among money boys, additional research and interventions are required in order to reduce these risks among the MSM population in Shanghai, China.

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Chapter One

INTRODUCTION

In 1997, "homosexuality" was decriminalized in China. Even though this was considered to be a victory for many "homosexual" individuals, there still existed limitations between same-sex couples. Homosexuality in China is still defined as "abnormal" in the eyes of Chinese law and regulations, and homosexuals are frequently harassed and detained by police for their sexual preference. Rights to marriage and representation in family law are not granted to homosexual couples, and the availability of fertility services to LGBT couples remains purposefully limited. In 2001, Homosexuality was removed from the official list of mental disorders, showing a recent sign of progress for the dignity and rights of "homosexuals" in China. (Mountford, 2010).

Before continuing with further outlying of the legal rights of "homosexuals" and the legal ramifications associated with "homosexuality" it is important to discuss why homosexuality is being placed within quotation marks. "Homosexuality" as Westerners know it, is not an identity in China. Instead, the term *tongzhi* describes a population of people who engage in sexual activity with the same sex. It is a term that was derived from the days when China was under communist rule, and literally means, "comrade." A Hong Kong gay activist first used *Tongzhi* in 1989, and the term was accepted by the community "for its positive cultural references, gender neutrality, desexualization of the stigma of homosexuality… and use as an indigenous cultural identity…" (Chou 2000, p. 2). Chou continues his description of *tongzhi* by stating that it proclaims "one's sexual identity by appropriating rather than denying one's familial-cultural identity." Therefore, *tongzhi* is much more than a sexual identity, or a proclamation to a sexual minority

group, it is a political and cultural statement that unifies individuals that would otherwise be segregated from mainstream Chinese culture. (Chou, 2000).

Another term that is necessary to know in order to understand the concept of "homosexuality" in China is; *tongxinglian*, which is a term that describes sex between people of the same sex (Chou 2000, p.22). Prior to 1997, *tongxinglian* was considered to be a form of hooliganism in the eyes of the legal system, and a mental disease determined by the medical profession. Frequent police raids targeted *tongzhi*, and consequently men were imprisoned for having consensual sex in the privacy of their own home. It was not until January 1st of 1997 that the Criminal Procedure Act of the People's Republic of China was passed, which decriminalized sodomy between two consenting adults for sexual behavior in private. Yet, *tongxinglian* was still considered a mental illness according to the Chinese Classification of Mental Disorders (CCCMD-2-R), in which it was a disease that caused abnormal behavior and was treated psychoanalysis and/or with electric shock therapy. Therefore, it is not shocking to have contemporary Chinese *tongzhi* to experience "guilt, shame, confusion, self-hatred, and a low self-image" (Chou, 2000, p.115). In the CCMD-3, updated in 2001, homosexuality is still considered a diagnostic category, but only homosexuals who experience distress are classified as "mentally ill" (Lee, S. 2001). Therefore, homosexuality has been de-pathologized to a point, but Lee believes the complete "depathologization of homosexuality may take a longer time than in the United States" (Lee, S. 2001).

Given the social, cultural, and political histories in which modern tongzhi are derived, this population makes for an incredibly interesting study population. This study

will be focusing on men who have sex with men (MSM) in China, and will attempt to understand the psychosocial correlates that are associated with depression among MSM.

A meta-analysis of global disease burden was conducted in 2013 in order to determine the effects of depressive disorders on the world population. Ferrari et al. 2013 determined that mental and substance use disorders, depressive disorders, and major depressive disorder (MDD), accounted for 7.4%, 3.0%, and 2.5% of the global burden of disease, respectively. They determined that MMD is the leading cause of global disease burden, and is associated with the burdens of suicide and ischemic heart disease (Ferrari, Charlson, Norman, Patten, & Freedman, 2013). A similar systematic review in 2013 was conducted for MDD Chinese patients in mainland China. The current prevalence of major depressive disorder among urban residents is 1.7%. Among male urban Chinese residents, the current prevalence for major depressive disorder is 1.3%, as determined with structured clinical interviews for the DSM-IV. The authors concluded that the current prevalence for MDD among the mainland Chinese population is lower than other Asian nations, including Japan (2.9%), and the United States (4.1%). (Druss, Hoff, & Rosenheck, 2000; Gu et al., 2013).

Among MSM populations, depression rates are consistently higher than the general population. A probability study conducted in San Francisco, New York, Los Angeles, and Chicago determined that 7-day depression prevalence among their sample was 17.2%. The major correlates associated with depression were multiple instances of anti-gay violence, child abuse, being “closeted,” and community alienation. Interestingly, depression was highly associated with the Asian or Pacific Islander ethnicity (Mills et al., 2004). In China, few studies exist that describe the prevalence of depression among urban

MSM. A study conducted in Foshan in 2012, using respondent-drive sampling, a recruitment method used in this study, found that 34.8% of their sample exhibited depressive symptoms (Liu, J., Gao, Liang, Li, & Yang, 2012). Because there is a lack of literature concerning the prevalence of depression among Chinese MSM, this study will provide a better understanding of depression and associated psychosocial correlates.

Depression is common among those who have experienced abuse from a sexual partner. Unfortunately, there are few studies examining the prevalence of IPV among same-sex relationships in Asian cultures, therefore the association between depression and male-on-male IPV will be keenly examined in this study (Dunkle, K.L., et al., 2013; Egan et al., 2011; Murray, Mobley, Murray, & Mobley, 2009). In most Asian cultures, same-sex IPV has been severely under-researched perhaps because same-sex IPV is difficult to detect due the cultural norm of heterosexuality (Mak, Chong, & Kwong, 2010; Merrill, G.S., 1996).

Among a sample of lesbian, gay, and bisexual adults in Hong Kong, 79.1% of participants experienced at least one form of IPV from a same-sex partner, and 48.1% of participants experienced more than one form of IPV from a same-sex partner (Mak et al., 2010). Among a sample of Chinese MSM in Shanghai, 44.8% of participants experienced one form of IPV from a male partner (Dunkle, K.L., et al., 2013). A unique aspect of Dunkle et al.'s (2013) study of male-on-male IPV is the focus on a sub-population of MSM, a self-identifying group called "money boys." Money boys are a group of men who have recently migrated from rural China and engage in sex work in Shanghai, China. Dunkle et al. (2013) found that 57.4% of money boys experienced some form of abuse from a male sexual partner/boyfriend.

Additionally, 32.0% of money boys, and 24.1% of the general MSM population experienced two or more forms of abuse from a male sexual partner/boyfriend. This study shows MSM in China experience high rates of IPV, and money boys are more vulnerable to violence from their male partners. Dunkle et al. (2013) also found that Chinese MSM who experienced IPV were more likely to report HIV risk behaviors, just as heterosexual women from non-Western countries (Decker et al., 2009; Jewkes, R.J., Dunkle, Nduna, & Shai, 2010; Raj et al., 2006).

Statement of the Problem

The aim of this thesis research was to determine the rate of depression among general men who have sex with men (MSM) and money boys in Shanghai, China. Three different recruitment methods were utilized in this study; therefore the rate of depression among MSM and money boys was compared across the three methods of recruitment. Additionally, the psychosocial correlates associated with depression were explored among general MSM and money boys. With the direction of the Syndemic Theory, a synergistic production of depression among general MSM and money boys due to the experience of multiple psychosocial correlates was tested. This study was designed to answer the following research questions:

1. What is the rate of depression among a sample of general MSM and money boys?
2. What psychosocial correlates are present among the sample of general MSM and money boys in Shanghai, China, what is the rate of these psychosocial correlates, and are they associated to depression?

3. How do the rates of depression and psychosocial correlates differ between the general MSM and money boys in the sample?
4. How do the rates of depression and psychosocial correlates differ among the three different methods of recruitment; respondent-driven sampling (RDS), community popular opinions leader (CPOL), and venue-based approaches?
5. Does a syndemic production of depression exist because of the synergistic interaction of multiple psychosocial correlates experienced by general MSM and money boys in Shanghai, China?

Purpose of the Study

This study can be seen as an exploratory analysis of depression and associated psychosocial correlates among general MSM and money boys in Shanghai, China. An understanding of the rate of depression among general MSM and money boys and the psychosocial correlates associated with depression can be used to develop targeted interventions in attempt to reduce the rate of depression and its health consequences. Therefore, the purpose of this study is to explore the rate of depression among general MSM and money boys, to understand why the rates of depression are different among general MSM and money boys, and how psychosocial correlates interact with the health outcome of depression.

Significance of the Study

Wong et al. (2008) conducted a study measuring the HIV risks of gay and non-gay identified money boys in Shanghai, China, and found that 60.7% of money boys

exhibited elevated to highly elevated depressive symptoms. Additionally, money boys that identified as gay reported a higher prevalence of sexual violence compared to those that identified as non-gay. They found that depression was associated with stress, dissatisfaction with life, and experience of sexual abuse (Wong, F.Y., et al., 2008). Depression, in addition to partner violence and substance abuse, was found to be correlated to multiple sexual relationships (Senn, Carey, & Vanable, 2010). Therefore, we believe depression is an important risk factor for intimate partner violence, and could also have additive effects with sexual concurrency to worsen the health outcome of this study; depression. We hypothesize that similar rates of depression will be seen in our sample of urban Chinese MSM and money boys, compared to the rates of depression among other urban samples of MSM.

To date, a study measuring synergistic factors that affect depression among general MSM and money boys has not been conducted. Only one syndemic production has been studied among this population in Shanghai, China. Yu et al. (2013), using RDS, found that MSM in Shanghai exhibited a high prevalence of smoking. They found that an individual's level of smoking (light vs. heavy) was influenced by psychosocial factors of alcohol and drug use, depression, and male-on-male IPV. More specifically, the effects of demographic characteristics (i.e. education level), substance use, and psychosocial factors were moderate for light smokers, as compared to heavy smokers. Therefore, this syndemic production was indicated by one's level of smoking (light vs. heavy) (Yu et al., 2013).

This project utilizes three methods of recruitment; respondent-driven sampling (RDS), community popular opinions leader (CPOL), and venue-based approaches.

Therefore, the rate of depression and associated psychosocial variables among general MSM and money boys could vary across recruitment methods, which will be an interesting component to consider when developing follow up studies or targeted interventions in the future.

There has yet to be an assessment of a syndemic production among MSM that involves depression as the health outcome. Therefore, this study can provide insight on the occurrence of depression among MSM and money boys, and how the synergistic effects of behavioral and psychosocial correlates exacerbate participant depression.

Theoretical Framework

Intertwined with high rates of HIV/STIs, IPV, and sexual concurrency are high rates of depression among MSM (Stall, R.F., Catania, JA., 2008). Because gay men, either closeted or openly gay, are exposed to discrimination in their daily lives, they are more likely to experience stress, low self-esteem, and social isolation from family and friends. Stall et al. (2008) have determined that there is a "syndemic production" of health disparities among gay men in urban areas of the United States. The syndemic theory refers to the interaction of two or more epidemics that interact synergistically and contribute to a burden of disease in a population (Singer, M. & Clair, 2003); Singer, M. et al., 2006). Perhaps the most accepted syndemic production is the interaction between substance abuse, violence, and AIDS. This syndemic is commonly referred to as "SAVA." It has been explained that these three conditions are "so entwined with each other and each is so significantly shaped by the presence of the other two that if one tried to understand them as distinct things in the world it is hard to conceive of them

accurately" (Singer, M. 2009). The syndemic theory can be aptly applied to the study for co-infections, co-occurring diseases, and accompanying social components. For instance, the asthma-influence syndemic is caused by an allergic reaction of the immune system (asthma) and an influenza infection that targets and kills the ciliated cells of the upper respiratory system, which is the site of asthmatic allergic reactions. It is suggested that even after influenza has been cleared from the immune system, immune components worsen pulmonary inflation and stimulate asthmatic reactions. Therefore, influenza infection and similar upper respiratory viruses worsen the effects of asthma, while asthma allows for exacerbated upper respiratory infections. Asthma and influenza synergistically produce a worsened condition for those affected by both, which is usually a population of lower socioeconomic status and among minorities. (Singer, M. 2009, pp. 53-68). The syndemic theory can, therefore, be applied to a wide variety of interacting biological and social epidemics.

Particularly among urban MSM, psychosocial health problems magnify the effects of the HIV/AIDS epidemic in this population. Stall et al. (2003) has found HIV/AIDS is far more complex than a cause and effect relationship; rather it is the additive effects of these health problems that magnifies the vulnerability of this population to serious health conditions such as HIV/AIDS (Stall, R. et al., 2003). Therefore, researchers in Western cultures have applied the syndemic theory to HIV research among MSM, and have found that synergistic psychosocial problems such as substance abuse, depression and IPV are negatively impacting the health of gay men (Egan et al., 2011; Lee, J.G., Griffin, & Melvin, 2009; Operario & Nemoto, 2010; Safren, S.A., Reisner, Herrick, Mimiaga, & Stall, 2010).

Syndemic productions have been researched among MSM in Shanghai, China as well. Yu et al. (2013) found that MSM in Shanghai exhibit a high prevalence of smoking, and a health syndemic is present in this population. More specifically, they found that alcohol consumption, drug use and depression were significantly associated with smoking. Additionally, they found that light smokers had less of an association to with substance abuse and psychosocial factors than heavy smokers, indicating a syndemic effect based on the level of smoking (Yu et al., 2013). We hypothesize a similar health syndemic will exist among our sample of money boys and MSM, and that will be an association between depression and psychosocial factors.

This study will be using a syndemic approach to measure the level of depression amongst MSM and money boys in Shanghai, China. To date, a study measuring the synergistic factors effecting depression among this population has not been conducted. The factors that are potentially synergistically affecting the health outcome of depression are; gender role beliefs, sexual concurrency, drug use and male-on-male IPV. This study will be considered preliminary research on the population of MSM and money boys in Shanghai who could eventually receive an intervention intended to reduce the rate of depression, and thereby potentially reducing the prevalence of other psychosocial variables that exist in this population.

Limitations

This study is limited by the following factors:

1. This study relied on self-reported behaviors, which no doubt yielded some bias in the results. Therefore, these measures may not be an accurate representation of the sample.
2. This study was based upon data gathered in Shanghai, an advanced urban city with over 20 million residents. This study's results do not apply to various MSM communities across China.
3. This study utilized purposive sampling. This sampling technique is prone to researcher bias and is not representative of the entire MSM population of China.
4. Participants of the Shanghai Men's Study were assumed to answer all of the survey questions to the best of their ability and with full honesty.
5. Participants enrolled in the Shanghai Men's Study were given an anonymous survey, completed in one hour, in Mandarin Chinese. Therefore, participants were assumed to be able to speak and read in Mandarin.

Hypotheses

This study was designed to test the following hypotheses:

1. A participant's level of held gender role beliefs predicts or reflects a participant's depressive symptoms.

2. If a participant has had concurrent sexual relationships, then he is more likely to have depressive symptoms.
3. A participant's amount of male-on-male IPV that he has experienced affects his level of depression.
4. If a participant has used drugs over the course of his life, then he is more likely to have depressive symptoms.
5. If a participant experiences traditional gender role beliefs, concurrent sexual relationships, male-on-male IPV, and drug use, then a syndemic production of depression exists amongst MSM and money boys in Shanghai, China.

Definition of Terms

Men who have sex with men (MSM). Rather than grouping men who have sex with men into categories, such as, "homosexual," "bisexual," etc., this general term categorizes all men who have sex with men. MSM may very well be in relationships with or are married to females, but also have sex with other men.

Money boys. A subpopulation of Chinese MSM migrants, known locally as "money boys," are engaging in commercial or transactional sex. These men self-identify as "money boys," and are not necessarily in personal relationships with men, but, like MSM, they may also have sexual relationships with women.

Hukou. This term indicates the participant's legal residency status, either Shanghai or other.

Tongzhi. This is a popular Chinese term for lesbians, bisexuals, and gay people. It also reflects the political and cultural implications of same-sex relationships in China (Chou, 2000).

Ethnicity. The participant's ethnicity is either Han, the dominant ethnic group in Shanghai, or other.

Monthly income. A participant's monthly income is in Yuan. 6.3 Yuan is equivalent to $1 US.

Depression. A screening for a participant's depressive symptoms was determined by a series of 12 questions in the participant survey, adapted from the short-form version of the Center for Epidemiologic Studies Depression Scale (CES-D-12) (Participant survey 4.2.4.a-l).

Male-on-male Intimate partner violence (IPV). This term indicates a participant's unwanted physical or emotional violence from a male partner (Participant survey 3.1.i-o).

Gender role beliefs. This term describes a participant's beliefs about the roles a male and female play in a relationship. Although this study is assessing the relationships between men who have sex with men, the gender role scale in this study is measuring the gender role beliefs between heterosexual couples because of the heteronormativity in Chinese culture (Participant survey 3.2.3.c, d, f, h-m).

Sexual concurrency. This term indicates the participant's engagement in overlapping sexual relationships within a designated time period. In the case of this study, the time periods indicated were; in the last 30 days, or the participant's lifetime. Both female and male sexual partners are considered in this definition of sexual concurrency (Participant survey 3.4.d-i).

Drug use. Participants were asked a series of questions concerning the type (alcohol, ecstasy, methamphetamines, heroin, etc.) of drugs they have used, and in what time frame they have used said drugs (never, don't know/don't remember, in the last 30 days, or in the past 3 months) (Participant survey 3.5. a-m).

Chapter Two

REVIEW OF RELATED LITERATURE

A literature review of depression, psychosocial correlates, and syndemic productions among MSM are presented in this chapter in the following format:

(1) The prevalence of depression in China and among MSM,

(2) Health consequences of depression,

(3) Depression correlates;

a. Gender role beliefs,
b. Sexual concurrency,
c. Drug use,
d. Male-on-male intimate partner violence.

(4) The global prevalence of intimate partner violence,

(5) Health consequences of intimate partner violence,

(6) Intimate partner violence among Chinese MSM,

(7) Syndemic productions among MSM,

(8) Effects of recruitment methodology on depression correlates and participant demographics, and

(9) Summary.

The Prevalence of Depression in China and Among MSM

The financial cost of depression is China is estimated to be almost $6.3 billion. Direct costs, referring to the payment of health services used to treat depression directly, associated with depression among the people of China is $986 million. Indirect costs, the value of resources lost due to depression and its symptoms, are estimated to be $5.3 billion (Hu, He, Zhang, & Chen, 2007). The prevalence of depression and the utilization of mental health services in China are difficult to determine, mostly because there is limited information reported at the national level (Hu et al., 2007). According to the World Health Organization- World Mental Health Survey, the 12-month prevalence of depression among Chinese adults is 2.1%, with a depression prevalence of 1.7% in Shanghai (Consortium, 2004).

MSM are disproportionately affected by mental health illness and psychosocial health problems, which require costly interventions that address the coexistence of health issues (S. A. Safren et al., 2010). The prevalence of depression among MSM varies greatly depending on the geography, HIV diagnosis, depression scale and measures used, and age of the study participants. In a study conducted among MSM in Chicago, the men were on average 37 years old, and were sampled from two postal zip code areas that are known to have high concentrations of gay men in Chicago. Almost 70 percent of the men from the Chicago Male Drug Use and Health Survey showed moderate to high depressive scale scores, according to the seven item CES-D scale (Fendrich, Avi, Johnson, & Mackesy-Amiti, 2013).

A qualitative study conducted in New York, Miami, and Los Angeles, found that 80% of their sample described a depressed mood in the last six months, and 17% of those

men reported suicidal ideation (Sandfort, Melendez, & Diaz, 2007). Also in New York City, 20% of a sample of HIV positive men above the age of 50 years old reported symptoms of depression, as measured by the Beck Depression Inventory-Version II (Halkitis et al., 2013).

Much like the MSM of China, MSM in India experience scrutiny for their lifestyle and are often forced into marriage, and lead a secret life outside of their marriage. In India, psychosocial correlates present in the MSM population remain understudied, but Saffron et al. conducted a study in 2009 among MSM in Chennai, India. Over half of their sample exhibited depressive symptoms that were clinically significant, as measured by the CES-D scale. The psychosocial correlates associated with the outcome of depression included; the number of male partners in the past three months, unprotected anal intercourse, family knowledge of their MSM identity, perception of acquiring HIV, and engaging in transactional sex (Safren, S.A., et al., 2009).

Clearly, there is a wide range of depression among MSM, ranging from 20% to 80%. As stated previously, the reasons for this wide range include differences in the demographic characteristics, sampling technique, and nation in which MSM live. For this study, we expect the prevalence of depression to fall within the range of 20 to 80%, and we most certainly expect to the prevalence of depression to be significantly higher than the national Chinese depression rate of 2.1%.

Health Consequences of Depression

From a financial and economic perspective, those with depression are likely to

miss work, or be impaired while at work, leading to a decrease in work productivity (Wang, Simon, & Kessler, 2003). On an individual level, depression may result in disability, premature death, and severe suffering of the affected individuals and their families (Hu et al., 2007). In China, 40% of the suicides are attributable to depression (Phillips, Li, & Zhang, 2002). Depression has particular health consequences for sexual minority men. A man who has sex with men with clinical depression is likely to have negative thoughts about himself and the world around him, negative beliefs about his own abilities, and negative social norms concerning condom use, leading to risky sexual behavior (Safren, S.A., et al., 2010). Therefore, it is crucial to understand the rates of depression among MSM and money boys in Shanghai in order to provide adequate healthcare services, and improve the health of individuals within the MSM community of Shanghai.

Depression Correlates

Gender role beliefs

One measure in this study will be gender role beliefs that our population possesses. A study conducted among Latino gay and bisexual men in New York, Miami, and Los Angeles found that because homosexual men were less likely to conform to "traditional" gender roles, and they experienced more mental distress. More specifically, a man's perception of being effeminate was significantly associated to symptoms of anxiety, depression, and suicidality during the last 6 months (Sandfort et al., 2007).

Due to the heteronormative culture in China, gender roles almost entirely been studied amongst male and female relationships. Xu et al. (2005) found that many women in China are influenced by the norms of a male-dominated culture. Consequently, a

woman's adherence to these norms is associated with the experience of IPV from her male partner. Women surveyed in their study believe that wife beating is somewhat justified, and they had a duty to have sexual intercourse with their husband. Women who held these beliefs were at a higher risk of IPV. The prevalence of physical and sexual abuse among the women surveyed was 21% and 12%, respectively. A women's belief in traditional gender roles put her at a higher risk of experiencing IPV from her husband (Xu et al., 2005).

Gender role beliefs held by Chinese MSM remain understudied and elusive. Consequently, among the Chinese MSM population, no studies have been conducted linking depression and gender role beliefs. Instead, social roles of MSM in China have been studied, which are, perhaps, a more obvious indication of gender roles between same-sex couples. Kong et.al (2002) found that those who engaged in homosexual practices strongly believed in their social roles. More specifically, they had a strong sense of duty to their family (Kong, 2002). As stated previously, widespread homophobia still exists in China, as Chinese culture emphasizes the continuation of paternal lineage. It has been suggested that social discrimination, such as homophobia, can lead to sexual concurrency (Adimora, Schoenbach, & Doherty, 2006). Therefore, a gay man in China may lead a double life, in which he is married to a woman and has a family, but also has male sexual partners (Liu, J.X., & Choi, 2006). This double life can lead to higher risks of transmitting HIV/STIs to the MSM and general population of China. Further research needs to be conducted in regard to the homophobia experienced by MSM in China, and perhaps gender role beliefs could be an indicator of social pressures in China. Therefore,

the gender role beliefs that MSM and money boys hold will be assessed in this study. Additionally, an assessment held gender role beliefs will be correlated to depression.

Sexual concurrency

Another risk correlate that will be assessed in regards to the health outcome of depression is sexual concurrency, or the number of overlapping sexual relationships in which one engages. Among a sample of MSM in Shanghai, China, researchers found that partner concurrency was a strong predictor for risk behavior, and even more so if MSM have male and female sexual partners. Female relationships tended to be longer and more permanent, while relationships with men tended to be shorter and more frequent (Choi, Hudes, & Steward, 2008).

Among MSM, the association between sexual concurrency and depression has been well studied, especially in reference to sexual risk behavior. Among a sample of MSM in Chennai, India, clinically significant depression was significantly associated with the number of male sexual partners a participant had in the last three months. In fact, for every additional male sexual partner in the last three months, there was a 4% increase in the existence of depressive symptoms. A participant's engagement in transactional sex increased their odds of depressive symptoms by five (Safren, S.A., et al., 2009).

As researchers studying IPV and sexual concurrency have found that men who have raped their female partners had more consensual partners than those who had never raped their partner. Additionally, men who had raped a non-partner were more likely to report more casual partners, and were more likely to have transactional sex (Jewkes, R., et al., 2006). Another study by Dunkle et al. (2006) found that IPV perpetration was correlated with having more sexual partners, and engaging in transactional sex (Dunkle et

al., 2006). The number of overlapping sexual relationships for money boys will be particularly important to study, because they have a large number of sexual partners, and may have both female and male partners (Wong, F.Y., et al., 2008). Sexual concurrency has been linked with higher rates of depression, as well as IPV among a sample of MSM recruited from an STD clinic. Senn et al. (2010) found that having multiple sexual partners created a 1.2 greater odds of exhibiting signs of depression.

Additionally, multiple sexual partners increased the odds of partner violence by a rate of 1.2. These results indicate an additive effect of psychosocial correlates on the health outcome of MSM (Senn et al., 2010). Therefore, sexual concurrency will be considered when studying the rates and correlates of depression among our sample of MSM in Shanghai, China.

Drug Use

Drug use is common among MSM across the world and it is a psychosocial variable that is consistently associated with depression. Among a sample of MSM in Chicago, nearly half of the men either reported drug use in their past or had tested positively to a drug test. Fendrich et al. found that men with a history of drug use and high levels of depression were more likely to have risky sexual behavior (Fendrich et al., 2013). Among HIV positive minority MSM in Los Angeles, 38% of the sample had used drugs in the past six months, and depression was significantly associated with the stigma of identifying as an MSM and having a positive HIV diagnosis (Wohl et al., 2012).

Male-on-Male Intimate Partner Violence

The correlation between depression and male-on-male IPV that has been well studied, and significant correlations between IPV and depression exist in MSM

populations. A cross sectional study of MSM in San Francisco, Los Angeles, Chicago and New York found that men experiencing IPV were at a 1.6 times greater odds of experiencing depression than those not abused by their partners (Stall, et al., 2003). This correlation was confirmed by another study of MSM in New York City, in which participants experiencing IPV were 1.58 times more likely to be depressed than those who had not experience male-on-male IPV (Parsons, Grov, & Golub, 2012). Additionally, among a sample of MSM in Chicago that have been abused by a partner, 43.9% of the men exhibited signs of depression, compared to 30.2% of men who had not been abused (Houston & McKirnan, 2007). These studies confirm that urban MSM in the United States that are experiencing male-on-male IPV are also experiencing symptoms of depression. Therefore, depression could prove to be an important correlate among our sample of urban MSM that report events of IPV.

The existing literature examining the prevalence of IPV among same-sex relationships in Asian cultures is minimal (Dunkle, K.L., et al., 2013; Egan et al., 2011; Murray et al., 2009). Using RDS recruitment, Dunkle et al. (2013) found that 57.4% of money boys experienced some form of abuse from a male sexual partner/boyfriend. Additionally, 32.0% of money boys, and 24.1% of the general MSM population experienced two or more forms of abuse from a male sexual partner/boyfriend (Dunkle, K.L., et al., 2013). This study shows MSM in China experience high rates of IPV, and money boys are more vulnerable to violence from their male partners.

The Global Prevalence of Intimate Partner Violence

Physical, sexual, or psychological abuse that occurs between intimate partners is referred to as intimate partner violence (IPV), whether it be between heterosexual or same-sex couples (Control, 2013). The prevalence of IPV varies between cultures and genders. In the United States, 25% of women and 7.9% of men in heterosexual relationships experience IPV, while 30% of individuals in same-sex relationships experience IPV (Island & Letellier, 1991; Tjaden & Thoennes, 2000). In India, 37.4% of wives experience physical, sexual or psychological abuse from their husband, while 35.2% women of rural South Africa experience IPV from their male partners (Decker et al., 2009; Jewkes, R.K., et al., 2010). The vast majority of IPV studies are between female-male dyads, with men being the perpetrators of violence (Letellier, 1994). Same-sex IPV remains drastically under-researched (Finneran & Stephenson, 2013; Murray et al., 2009). Among the existing literature, it has been shown that rates of IPV among same-sex couples are comparable to heterosexual couples, with IPV occurring in 25% to 66% of homosexual couples (Burke, Jordan, & Owen, 2002; Island & Letellier, 1991; McClennen, 2005). The majority of studies examining the prevalence of IPV among same-sex couples have been conducted in Western societies, in various urban centers of North America or Western Europe (Donovan, Hester, Holmes, & McCarry, 2006; Heintz & Melendez, 2006; Koblin et al., 2006; Stall, R., et al., 2003)

One study comparing the prevalence of IPV among same-sex couples of the United States, United Kingdom, Canada, Australia, South Africa and Brazil, found that the prevalence of IPV among MSM differed slightly between Western and non-Western Societies (South Africa and Brazil). Amongst MSM in Western cultures, the rate of

physical violence was between 5.7 – 9.0%, while the prevalence of physical violence in South Africa and Brazil was between 7.0 – 11.7%. MSM in Western countries experienced sexual violence from a male partner at a rate of 2.5 – 4.5%, while MSM in non-Western cultures experienced sexual violence at similar rates between 2.7 – 4.0%. This exhibits worldwide prevalence of IPV amongst MSM, especially in nations where homosexuality is highly stigmatized and underreported. Across all the studied countries, the majority of the men reported experiencing heteronormative pressures from society, which indicates that there may be an association between IPV and experiences of homophobia in the MSM population (Finneran, Chard, Sineath, Sullivan, & Stephenson, 2012).

Health Consequences of Intimate Partner Violence

The health consequences of IPV can severely affect the mental and physical well-being of the individual receiving violent attacks from their intimate partner. IPV among heterosexual couples is associated with the contraction of HIV in South African women (Dunkle, K.L., et al., 2004; Jewkes, R.K., et al., 2010). Additionally, high levels of male control in a heterosexual relationship were associated with HIV contraction (Dunkle, K.L et al., 2004). In India, abusive husbands were at higher odds of HIV acquisition outside the marital relationship, and their wives were seven times more likely to acquire HIV in an abusive relationship (Decker et al., 2009). The association between a women's experience of IPV and the contraction of HIV from a male partner can be explained by the perpetrator's risky sexual behavior. In a study that recruited male participants from a community center in Boston, Massachusetts, 41.3% of the participants reported

perpetrating IPV in the past year. Those who reported IPV within the past year were significantly more likely to report the following; inconsistent or no condom use during vaginal or anal intercourse with their main female partner, forcing sexual intercourse without a condom with their main female partner, having sexual intercourse with another women, and having fathered three or more children (Raj et al., 2006). Clearly, IPV among heterosexual couples is associated with risky sexual behavior, and therefore the contraction of sexually transmitted infections. IPV also increases the chances that an individual will experience more unwanted sex and less condom use, which increases one's odds of contracting HIV or other sexual transmitted infections (Dunkle, K.L & Decker, 2013). Additionally, experience of IPV from a sexual partner is linked to concurrent sexual relationships, increased number of overall sexual partners, and increased participation in transactional sex (Dunkle, K.L et al., 2007; Raj et al., 2006). Similar associations have been confirmed in same-sex partners that experience IPV.

A literature review conducted by Michael Relf (2001) found that there are three studies examining the correlation between HIV and IPV among MSM (Relf, 2001). A study conducted by Merrill and Wolfe found that 5.7% of participants seeking therapy for domestic violence were infected with HIV as a direct consequence of IPV from a seropositive male partner (Merrill, G.S., & Wolfe, 2000). Among a sample of Latin American men living in New York City, men were more likely to be physically and sexually abused if they engaged in unprotected anal intercourse (Nieves-Rosa, Carballo-Dieguez, & Dolezal, 2000). Conversely, after learning of their HIV seroconversion, 11.5% of MSM surveyed by the HIV Costs and Service Utilization Study reported being physically abused (Zierler et al., 2000).

In China, this study's country of focus, MSM account for 17.4% of all the HIV/AIDS cases (AIDS Response Progress Report, 2012; Merli, 2006; Xia, 2006). Approximately one-third of Chinese MSM are married to women, and may even self-identify as "heterosexual." Therefore, this population of MSM is considered to be the bridge for infection among women in China (Choi et al., 2008; Wong, F.Y., et al., 2009). Among a sample of Chinese MSM in that also has sex with women, 8.4% were infected with HIV, and 10.8% with Syphilis. In comparison, MSM that only have sex with men, 4.9% and 23.7% were infected with HIV and Syphilis, respectively. In addition, MSM that have sex with women had higher rates of unprotected sex with their female partners than MSM that only have sex with men. The prevalence of STIs and rate of risky sexual behavior among MSM that also have sex with women indicate that they are at higher risk of HIV infection and transmission (Guo, Li, Song, & Liu, 2012). Money boys that self-identify as "heterosexual" are at a higher risk of contracting and spreading HIV and STIs because (1) they have a large number of sexual partners, (2) lack the power for condom negotiation, (3) may have both female and male partners in the commercial and non-commercial realms (Wong, F.Y., et al., 2008). Therefore, the bisexual behavior of MSM and money boys in China should be studied in addition to sexual concurrency because these behaviors are associated with increased individual risk of HIV/STI infection and transmission.

In regards to the association between IPV and HIV risk of Chinese MSM, there has only been one study conducted to test this association. Dunkle et al. (2013) found that MSM experiencing all forms of abuse; physical, social, emotional or sexual, were more likely to report HIV risk behavior. In this study, money boys and MSM were recruited

via respondent driven sampling (RDS). Among the MSM sampled, those that reported multiple forms of abuse from a male partner were more likely to report having unprotected sex with a man, sex while under the influence of drugs or alcohol, and sex with a prostitute. These results indicate a need for interventions that target IPV reduction in order to prevent further HIV infection and transmission in China (Dunkle, K.L., & Decker, 2013).

Additional health consequences are observed among MSM as a result of IPV. In a study examining the psychosocial health outcomes among gay and bisexual men in Chicago that have experienced abuse from a male partner, abused men were 1.6 times more likely to experience physical health problems (high blood pressure, heart disease, obesity, etc.) than non-abused men. Additionally, abused men were 1.7 times more likely to report mental health diagnosis than non-abused men. Depression was the only psychosocial factor significantly related to intimate partner abuse, and abused men were 1.6 times more likely to be depressed than non-abused men (Houston & McKirnan, 2007). Another study measuring prevalence of co-occurring psychosocial health problems among urban MSM in the United States found that partner violence is associated with childhood sexual abuse, substance abuse and depression. Those who experienced partner violence were 1.6 times more likely to have depression that those who were not abused by a male partner (Stall, R., et al., 2003). These studies emphasize the importance of determining the association between IPV and depression among MSM. Therefore, depression will be considered as a factor associated with the increased prevalence of IPV among MSM in China, as other studies have found (Dunkle, K.L., et al., 2013).

Intimate Partner Violence Among Chinese MSM

In a study in which participants were recruited by respondent driven sampling (RDS) in Shanghai, China, 44.8% of men who have sex with men (MSM) and 57.4% money boys reported any abuse from a male sexual partner. In addition, 25% of the sampled men reported multiple types of abuse from a male sexual partner (Dunkle, K.L., et al., 2013). Clearly, MSM and money boys in Shanghai are experiencing high rates of IPV, and the behavioral and psychosocial factors that are associated with IPV need to be understood in order to attempt to reduce the rates of male-on-male IPV. This study aims to understand the behavioral and psychosocial correlates that are associated with IPV among MSM and money boys. The correlates to be studied in association to male-on-male IPV are the participants held gender role beliefs, sexual concurrency, and depression. Finally, the synergistic effect of these correlates will be tested in order to identify if a Syndemic production of IPV is occurring among this population.

Among the existing literature describing the factors attributing to IPV in same-sex relationships, power imbalance, substance abuse, and internalized homophobia are frequently cited reason for IPV (Cruz & Peralta, 2001; Lockhart, White, Causby, & Isaac, 1994; McClennen, Summers, & Vaughan, 2002). Especially pertinent to the Chinese MSM population is the leading of a "double life" by victims of IPV. Many MSM maintain marriages to women because in China, "marriage is not simply an interpersonal or household issue; it is an economic, moral, and political institution, disciplining the livelihood of every resident" (Chou, 2000). According to Finneran et al. (2012), MSM experiencing violence may engage in "double lives" because of the social shame of their homosexual behaviors (Finneran et al., 2012). Chinese MSM may also lead a "double

life" because of the duty to their roles as the head of the household and as a tongzhi. The term "tongzhi" is a contemporary Chinese word for lesbians, bisexuals, and gay individuals. The term describes less of an identity, and more of a social relationship shown through practices of everyday life, and it describes a class of people with certain socials roles (Wong, F.Y., et al., 2009). It has been argued that this term is an exercise of autonomy, and a strategy to protect themselves and their families from the stigma associated with homosexuality (Zhou, 2006). Therefore, sexual identity does not seem to be an appropriate variable to consider when studying intimate partner violence among MSM in China. Instead, gender role beliefs may be more appropriate to understand in relation to male-on-male IPV. An understanding of MSM and money boy's gender role beliefs; i.e., their role in a relationship, their tolerance for abuse from a sexual partner, or what duties are expected of them, will allow a correlation with their experience of male-on-male IPV.

Also related to the "double life" of *tongzhi* is a high prevalence of concurrent sexual relationships. If a man is pressured into continuing his family lineage, getting married and having children, then he may have a wife while simultaneously having male sexual relationships. Or, in the case of money boys, their financial hardship may cause them to have multiple sexual relationships in one night (Liu, J.X., & Choi, 2006). Among a sample of men in Shanghai, China, 33% of the men reported having concurrent sexual relationships with male partners, and 15% had concurrent sexual relationships with male and female partners (Choi et al., 2008). We hypothesize that our sample of MSM and money boys will exhibit similar rates of sexual concurrency, therefore potentially being exposed to more male-on-male IPV.

Syndemic Productions Among MSM

The Syndemic theory supports that health outcomes for MSM are worsened by the interaction of IPV, depression, substance abuse, stress, childhood sexual abuse, and sexual risk behaviors (Dyer et al., 2012; Mustanski, Garofalo, Herrick, & Donenberg, 2007; Parsons et al., 2012; Senn et al., 2010; Stall, R., et al., 2003). The first study to examine a syndemic production among MSM occurred in 2003. Stall et al. (2003) found greater numbers of psychosocial health problems among urban MSM were associated with higher rate of risky sexual behavior and HIV infection. They determined that depression, substance abuse, childhood sexual abuse, and partner violence were associated with sexual risk and HIV infection, and had an additive effect on these health outcomes (Stall, et al., 2003). In response to this study conducted by Stall et al. (2003), Mustanski et al. (2007) explored the additive effects of substance abuse, psychological distress, partner violence and multiple anal sex partners on HIV risk among young MSM. They found that an increase in the number of psychosocial health problems increased the odds multiple anal sex partners, unprotected anal sex, and HIV seropositivity. This study affirms that multiple co-occurring psychosocial health problems also exist among young, urban MSM (Mustanski, et al., 2007).

Interactions of psychosocial problems, i.e., childhood sexual abuse, substance abuse, and IPV, worsened sexual health problems, was also seen among participants seeking care at an urban STI clinic (Senn, et al., 2010). A cross sectional study of MSM in New York City found several interactions between depression, partner violence, sexual compulsivity, and childhood sexual abuse. Additionally, the greater number of health problems in which a participant reported was associated with a greater odds of prevalence

for HIV infection and high-risk sexual behavior (Parsons, et al., 2012). This Syndemic production was also produced in urban Black MSM, in which a greater number of psychosocial conditions; depression, IPV, stress, and substance abuse, was correlated to greater risky sexual behavior (Dyer, et al., 2012).

Clearly, there are several studies that have shown that, in accordance with the syndemic theory, there are co-occurring psychosocial conditions that are resulting in magnified consequences (Singer, M., & Clair, 2003; Singer, M., et al., 2006). The literature shows that MSM have high rates of psychosocial problems, including; depression, multiple sexual partners (sexual concurrency), substance abuse, childhood sexual abuse, risky sexual behavior, and IPV. Although not as widely studied, money boys also experience higher rates of sexual concurrency, depression, and intimate partner violence (Dunkle, et al., 2006; Dunkle, K.L., et al., 2013; Wong, F.Y., et al., 2008). We hypothesize that money boys will experience higher rates of these correlates, as well as higher rates of male-on-male IPV, just as other studies have found (Dunkle, K.L., et al., 2013).

Effects of Recruitment Methodology on Depression Correlates and Participant Demographics

The large majority of sampling techniques utilized for studies conducted with MSM are convenience samples that contain an over-representation of bar patrons. Consequently, prevalence estimates collected for MSM populations could be inaccurate (Stall, R., & Wiley, 1988). Therefore, studies conducted on MSM populations have used multiple forms of recruitment methods in order to sample a more accurate representation

of the population. For instance, a study conducted by Stall and Wiley in areas of San Francisco with high MSM populations utilized a large-scale random household sample of both homosexual and heterosexual men in order to verify if the high prevalence of alcohol and drug use among MSM was accurate. They found that the high prevalence rate of alcoholism found in other studies was not replicated in their study that utilized a random household sample of men. This finding prompted the suggestion that future studies to carefully utilize sampling strategies that recruited men both inside and outside of areas known to have large concentrations of MSM in order to determine accurate prevalence rates of alcohol and substance use among this population. (Stall, R., & Wiley, 1988)

A more recent study conducted by Grov in 2012 utilized three different venues; bathhouses, bars/clubs, and craigslist.org in New York City, in order to evaluate how behavioral and demographic characteristics vary by recruitment method. Grov found that the HIV status, race and ethnicity, sexual identity, relationship status, and age differed significantly between recruitment methods. Sexual behaviors, like anal sex with a casual male partner and discussing HIV with sexual partners, also differed significantly among the three recruitment methods. Additionally, the total number of male partners in the last three months, the total number of anal sex acts in the last three months, the proportion of total anal sex acts that happened without a condom, and the total number of anal sex acts that occurring while drunk or high on drugs differed significantly across the three recruitment methods. Drug and alcohol use across the three recruitment methods also differed significantly with the following variables; lifetime cocaine, ecstasy, and ketamine use, recent drug use of cocaine, methamphetamines, and Viagra/Cialis/Levitra,

and alcohol use in the last three months. In summary, the three recruitment methods utilized significantly affected the demographics, sexual behavior, and the drug and alcohol use displayed among the sample (Grov, 2012). The study provides evidence that it is necessary to recruit participants from multiple sources in order to obtain a more representative sample.

More pertinent to the study described in this paper is a study conducted in Beijing, China by Guo et al. in 2011. Guo et al. utilized four sampling methods; peer outreach, informal social network, Internet, and venue-based, in order to recruit a more representative sample of MSM in Beijing. They analyzed sociodemographic and behavioral factors, as well as the rate of HIV and Syphilis infections among young migrant MSM. Among the sociodemographic characteristics that varied significantly across the four recruitment methods were; age, duration of migration, number of cities stayed, duration in Beijing, number of places worked, monthly income, level of education, and kind of employment. In addition, the prevalence of Syphilis, age of first sex, number of female sex partners in the last week, number of sexual partners in their lifetime, involvement in commercial sex work in the last six months, and drug use differed significantly across the four recruitment methods. This study demonstrates that recruitment method causes a significant difference in the sociodemographic characteristics, sexual risk behavior, and drug use among the participants of each recruitment venue (Guo et al., 2011).

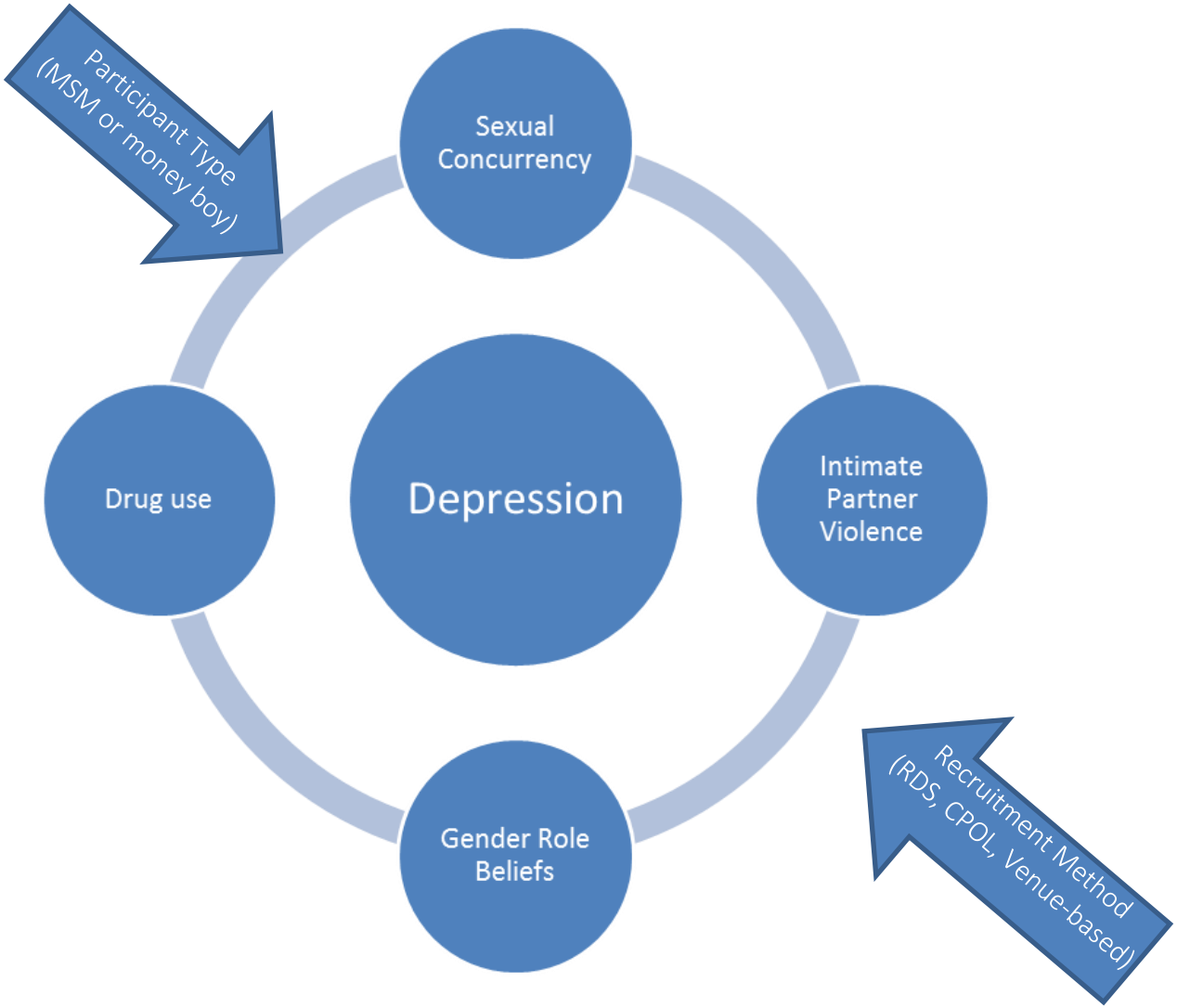
Because there has been evidence that recruitment methodology affects demographic factors, sexual behaviors, and substance use, this study utilized three

different recruitment methods in attempt to recruit a more representative sample of MSM in Shanghai, China.

Summary

There has yet to be an assessment of a syndemic production that involves depression among Chinese MSM as the health outcome. Therefore, this study can provide insight on the occurrence of depression among MSM and money boys, and how the additive effects of behavioral and psychosocial correlates exacerbate depression in our sample. More specifically, we hypothesize that the held gender role beliefs of our sample, sexual concurrency, drug use, and male-on-male IPV will be correlated to the depressive symptoms of our participants. We predict that gender role beliefs, sexual concurrency, participant drug use, and male-on-male IPV will produce a syndemic that worsens the prevalence of depression that MSM and money boys experience in Shanghai, China. We expect recruitment method (RDS, CPOL, or venue-based approaches) will be a moderating variable in this cross sectional study. Therefore, we predict a difference in the rate of depression, psychosocial correlates, and drug use behavior, and a difference in participant demographic characteristics based on recruitment method. In addition, we expect that participant type (money boy or general MSM) to be a moderating variable. Therefore, we expect a significant difference between money boys and general MSM's level of depression, sexual concurrency, held gender role beliefs, drug use, and male-on-male IPV, as well as a significant difference in demographic characteristics (Figure 1).

Figure 1 Syndemic Production of Depression Among Chinese MSM.



Chapter Three

DATA COLLECTION AND PROCEDURES

Statement of the Problem

The problem addressed by this thesis research was to determine the rate of male-on-male depression among general men who have sex with men (MSM) and money boys in Shanghai, China. Three different recruitment methods were utilized in this study; therefore, the prevalence of IPV among MSM and money boys was compared across the three methods of recruitment. Additionally, the psychosocial correlates associated with depression were explored among general MSM and money boys. With the direction of the Syndemic theory, a synergistic production of depression among general MSM and money boys due to the experience of multiple psychosocial correlates was tested. This study was designed to answer the following research questions:

1. What is the rate of depression among a sample of general MSM and money boys?
2. What psychosocial correlates are present among the sample of general MSM and money boys in Shanghai, China, what is the rate of these psychosocial correlates, and are they associated to depression?
3. How do the rates of depression and psychosocial correlates differ between the general MSM and money boys in the sample?
4. How do the rates of depression and psychosocial correlates differ among the three different methods of recruitment; respondent-driven sampling (RDS), community popular opinions leader (CPOL), and venue-based approaches?

5. Does a syndemic production of depression exist because of the synergistic interaction of multiple psychosocial correlates experienced by general MSM and money boys in Shanghai, China?

Human Subjects Approval

This thesis study was a secondary data analysis of a larger study, the Shanghai Men's Study. All participants of the Shanghai Men's Study were recruited voluntarily by asking individuals within the MSM and money boy communities to tell their acquaintances about the study and by speaking with potential participants at various venues in Shanghai that are frequented by MSM and money boys. All participants were informed, in Mandarin Chinese, of the nature and purpose of the study, interview procedures, their confidentiality, payment for participation, risks and benefits of participation, and their right to stop participating at any time during the study without penalty. Participants were then asked to sign three copies of a consent form, one form was given to the participant, and the other two were kept in project files. If they could not or did not sign the consent form, then they were not in the study.

All of the information collected from the participants was identified by an ID number and kept in locked files and password-protected computer files, separate from any personal contact information. Participants who were found to be infected with gonorrhea, syphilis, or herpes simplex II were prescribed the standard treatment regimens and care at a referred STD clinic. For individuals who tested positive in the aforementioned STIs, treatment costs were paid for by the study.

Participant Recruitment Methods

The study recruited 1,352 individuals, 631 money boys and 721 MSM. Three recruitment methods were used, all of which recruited approximately 200 participants. All participants are male, 18 years or older, able to give verbal and written consent in Mandarin, have had sex with another man (oral, anal, or both), and self-identify as a money boy or MSM. Additionally, all money boys were not native to Shanghai. The recruitment methods utilized were (1) respondent driven sampling (RDS), (2) community popular opinion leader recruitment (CPOL), (3) venue-based recruitment.

Respondent Driven Sampling

Study staff initially recruited eight seeds: four MSM who are not money boys (two gay-identified and two non-gay-identified) and four money boys (two gay-identified and two non-gay-identified). Staff asked each seed to recruit up to three peers and give them each three recruitment coupons (Appendix A) to distribute to their peers. These serially numbered coupons contained a brief description of the study and contact information (including a dedicated phone hotline) for potential participants to contact study staff.

A dedicated phone hotline was set up for the RDS subject recruitment. The phone line was answered between 9am through 5pm from Monday to Friday. Otherwise, a voicemail message encouraged callers to leave a phone number where they could be reached. Study staff returned the call within 24 hours in order to schedule a face-to-face appointment. Staff also maintained an RDS Phone Log of all incoming and outgoing calls in order to track the recruitment process.

When the individual arrived at his appointment, the study staff confirmed his eligibility to enroll in the study. Study staff used the Eligibility Confirmation Form (Appendix A) to validate and collect (1) inclusion/exclusion criteria and (2) demographic information. Once the study staff determined that an individual was eligible to participate, staff reviewed the informed consent process with the participant. Study staff verbally informed the participant of the nature and purpose of the study, interview procedures, the sensitive nature of the questions, confidentiality parameters, payment for participation ($40US for the survey), HIV/STI testing (paid for by the study), risks and benefits (included referrals to other needed services), and the freedom to cease participation at any time without penalty. When respondents had verbally indicated an understanding of these issues, they signed a copy of the Informed Consent Form (Appendix A) in order to continue with the study. Study staff gave a copy of the informed consent form to the participant and placed two copies of the form in the project files. Study staff also gave respondents a copy of the Research Subject's Bill of Rights.

Study staff administered the survey to participants privately at a designated office of Fudan University or at Shanghai Piaoxue Cultural Media Limited's central office. Because most money boys work at night, this was done after 2:00pm. Only a trained Interviewer was qualified to administer the survey. The survey took about one hour to complete, and the Interviewer remained available to answer any questions the participant had.

After completing the survey, study staff wrote down each participant's unique Study ID and the serial numbers of their recruitment coupons. This allowed the Study

Team to track the recruitment process and appropriately compensate those who successfully recruited their peers.

After the participant completed the survey, study staff gave him $40US for his participation and was reimbursed for his local travel expenses. After the participant had completed the survey and been compensated, study staff asked the participant about his willingness to undergo testing for HIV, gonorrhea, herpes simplex II, and syphilis.

Study staff used an established tracking system in order to document (1) participant willingness to be tested and (2) HIV/STI test results at the CDC. These two items were linked to the behavioral survey using a unique identifying number. A Testing Counselor at Fudan University coordinated these procedures with the Shanghai Municipal CDC.

If the participant agreed to be tested, study staff escorted him to the Shanghai CDC clinic or gave him the clinic's contact information. On the date of his appointment a member of the study staff met the participant at the Shanghai CDC clinic to assist if needed, even though medical personnel of the Shanghai CDC performed the actual testing procedures. Participants were asked to return to the CDC clinic (usually within two weeks) to meet with clinic staff for his result and Post-test Counseling. Study staff then contacted personnel at Shanghai CDC at the appropriate time regarding participants' HIV/STI test results.

Study staff was contacted by other individuals (the recruited) referred to the study by the prior participant (the recruiter). The study staff first verified the authenticity of the Recruitment Coupons to make sure that fake coupons were not being used. Staff also asked the recruit two questions before giving him the survey:

1. "How would you describe your relationship to the person who invited you to participate in this study?" and

2. "How many people do you know who are "money boys" over 18 years of age and living in Shanghai? These are people who you know and who also know you, who you know how to contact, and who you have seen in the last 6 months."

The first question helped determine how the recruited individual and recruiter were related. Possible answers for network relationship include: (a) friend or acquaintance, (b), partner, (c) boyfriend, (d) lover, (e) relative, (f) co-worker, (g) stranger, and (h) other. The second question helped measure the size of the social network. After staff received answers to these two questions, staff repeated the RDS recruitment process for this participant. Once the individual referred to the study (the recruited) by a prior participant (the recruiter) completed the survey, the recruiter contacted staff to receive his compensation. When the participant returned to the study site to claim him recruitment incentives, study staff asked him four questions:

1. "How many coupons did you give out?"
2. "How many people refused to accept the coupons?"
3. "What reasons did that person give you for not taking the coupon?" and
4. "Do you remain in contact with the person who invited you to participate in the study?"

Study staff gave the recruiter $15US for each individual he successfully recruited. In addition, study staff contacted participants who had not recruited any peer into the study 10 days after taking the interview. Study staff asked him three questions:

1. How many coupons did you give out, if any?"
2. What is the level of interest of their friends in participating in the study?"
3. "What reasons were given by those who did not want to participate in the study?"

The research team used a Microsoft Access data management system. Study staff entered participants' responses of the Eligibility Form, the Study Identifier, and/or the

Behavioral Instrument into a Microsoft Access database form. Study staff sent all original documentation and paperwork to Emory University on a regular, quarterly basis. Copies of all data were forwarded to the research staff at Fudan University.

Community Popular Opinion Leader Recruitment

This recruitment utilized 40 community popular opinion leaders (CPOLs) from different segments of the money boy and MSM populations were nominated by a local NGO, Shanghai Piaoxue Cultural Media Limited (Kelly, 2004; Valente & Pumpuang, 2007). Of the CPOL, 20 were money boys and 20 were non-money boy MSM.

Shanghai Piaoxue Cultural Media Limited staff asked prospective CPOLs in the community if they would like to learn more about serving in that capacity for the study. If the prospective CPOL indicated an interest in serving as a CPOL, staff used the CPOL Eligibility Confirmation Form to validate and collect inclusion/exclusion criteria and demographic information. In order to be nominated, the CPOLs must have:

(a) Agreed to participate in the study as a CPOL
(b) Been 18 to 45 years old
(c) Self-identified as a money boy or non-money-boy MSM
(d) Had previous experience working as a money boy or working with money boys, or
(d) Been popular, well liked, and trusted by money boys in different population segments.

All CPOL trainees were asked to provide informed consent for their participation. Staff reviewed the informed consent process with the CPOL trainee. Staff verbally informed him of the nature and purpose of the study, content of the trainings, confidentiality parameters, payment for participation ($100 for training), and the freedom to cease participation as a CPOL at any time without penalty. When respondents verbally indicated an understanding of these issues, they signed a copy of the Informed Consent

Form in order to continue with the study. Study staff gave a copy of the informed consent form to the CPOL and placed two copies of the form in the project files. Study Staff also gave the CPOLs a copy of the Research Subject's Bill of Rights. Each CPOL signed a copy of the CPOL Informed Consent Form before participating in the CPOL training.

Training consisted of two 90-minute group interactive sessions led by staff of the Shanghai Piaoxue Cultural Media Limited and Fudan University. The training took place at the central office of Shanghai Piaoxue Cultural Media Limited on weekdays for money boys and on weekends for MSM. They also gave trainees a brief pre- and post-training survey in order to help guide implementation of the overall study. In session one, basic epidemiology of HIV infection, high-risk behavior, and precautionary changes needed to reduce risk and misconceptions concerning risk were covered. In addition, discussions of how HIV and STI infection can be prevented by changing behaviors were covered. In session two, a review of the study's goals, procedures (including inclusion and exclusion criteria), and risks and benefits to participants was conducted. They also discussed how and when to properly approach potential participants, the need to keep private the identity of participants in order to protect individuals' confidentiality, and remind them that the participation from those they approach is entirely voluntary. Finally, opinion leaders were asked to initiate and invite 10 to 15 money boy (or MSM) friends or acquaintances into the study. The Study Team created a master list of these recruits in order to make sure that (1) no individual had been recruited twice and (2) a random sample of 200 money boys and 200 general MSM were selected to enroll in the study. CPOLs asked eligible participants to contact Interviewers in order to set up a time and place to take the

survey and receive HIV/STI testing if he wished. Each CPOL was given $100 for participating in the training and recruiting of participants.

When an individual arrived for his appointment, a study staff confirm his eligibility to enroll in the study. Staff used the Eligibility Confirmation Form to validate and collect the aforementioned (1) inclusion/exclusion criteria and (2) demographic information. Once the study staff determined that an individual was eligible to participate, Staff reviewed the informed consent process with the participant. Study staff verbally informed the participant of the nature and purpose of the study, interview procedures, the sensitive nature of the questions, confidentiality parameters, payment for participation ($40US for the survey), HIV/STI testing (paid for by the study), risks and benefits (included referrals to other needed services), and the freedom to cease participation at any time without penalty. When respondents had verbally indicated an understanding of these issues, they signed a copy of the Informed Consent Form (Appendix A) in order to continue with the study. Study staff gave a copy of the informed consent form to the participant and placed two copies of the form in the project files. Study staff also gave respondents a copy of the Research Subject's Bill of Rights.

Study staff administered the survey to participants privately at a designated office of Fudan University or at Shanghai Piaoxue Cultural Media Limited's central office. Because most money boys work at night, this was done after 2:00pm. Only a trained Interviewer was qualified to administer the survey. The survey took about one hour to complete, and the Interviewer remained available to answer any questions the participant had.

After completing the survey, study staff wrote down each participant's unique Study ID and the serial numbers of their recruitment coupons. This allowed the Study Team to track the recruitment process and appropriately compensate those who successfully recruited their peers.

After the participant completed the survey, study staff gave him $40US for his participation and was reimbursed for his local travel expenses. After the participant had completed the survey and been compensated, Study Staff asked the participant about his willingness to undergo testing for HIV, gonorrhea, herpes simplex II, and syphilis.

Study staff used an established tracking system in order to document (1) participant willingness to be tested and (2) HIV/STI test results at the CDC. These two items were linked to the behavioral survey using a unique identifying number. A Testing Counselor at Fudan University coordinated these procedures with the Shanghai Municipal CDC.

If the participant agreed to be tested, study staff escorted him to the Shanghai CDC clinic or gave him the clinic's contact information. On the date of his appointment a member of the study staff met the participant at the Shanghai CDC clinic to assist if needed, even though medical personnel of the Shanghai CDC performed the actual testing procedures. Participants were asked to return to the CDC clinic (usually within two weeks) to meet with clinic staff for his result and Post-test Counseling. Study staff then contacted personnel at Shanghai CDC at the appropriate time regarding participants' HIV/STI test results.

The research team used a Microsoft Access data management system. Staff entered participants' responses of the Eligibility Form, the Study Identifier, and/or the

Behavioral Instrument into a Microsoft Access database form. Study staff sent all original documentation and paperwork to Emory University on a regular, quarterly basis. Copies of the data were forwarded to the research staff at Fudan University.

Venue-Based Recruitment

The Research Team consulted with Shanghai Piaoxue Cultural Media Limited to identify outreach venues for different segments of the money boy population. Staff of the Shanghai Piaoxue Cultural Media Limited worked with venue owners/managers to establish three types of venues:

1. Staff used a variety of Internet applications, such as "QQ" which is a short messaging service, and JACKD and GRINDR which are smartphone applications,
2. Bath houses,
3. And bars.

Staff of the Shanghai Piaoxue Cultural Media Limited worked with venue owners/managers to establish three types of outreach mechanisms at the bathhouses and bars:

1. A place to put outreach materials such as fliers,
2. A mutually agreeable time for Outreach Workers to mingle or "hang-out" in the establishment; and
3. A semi-private place for consulting with potential participants.

Throughout the venue-based recruitment phase, study staff conducted quarterly venue assessment and identification in order to account for new venue availability and venue closures. Shanghai Piaoxue Cultural Media Limited had excellent working knowledge of the two focused venues, bars and bathhouses. During the enrollment period, staff wrote down the number of study subjects who enter the study from each site.

An individual became interested in the study after talking with a staff member and/or seeing outreach material about the study at a particular venue. He then contacted

the hotline to learn more about the study and/or schedule an appointment. Staff conducted preliminary eligibility assessment over the phone. When an individual arrived for his appointment, a study staff confirm his eligibility to enroll in the study. Staff used the Eligibility Confirmation Form to validate and collect the aforementioned (1) inclusion/exclusion criteria and (2) demographic information. Once the study staff determined that an individual was eligible to participate, staff reviewed the informed consent process with the participant. Study staff verbally informed the participant of the nature and purpose of the study, interview procedures, the sensitive nature of the questions, confidentiality parameters, payment for participation ($40US for the survey), HIV/STI testing (paid for by the study), risks and benefits (included referrals to other needed services), and the freedom to cease participation at any time without penalty. When respondents had verbally indicated an understanding of these issues, they signed a copy of the Informed Consent Form in order to continue with the study. Study staff gave a copy of the informed consent form to the participant and placed two copies of the form in the project files. Study staff also gave respondents a copy of the Research Subject's Bill of Rights.

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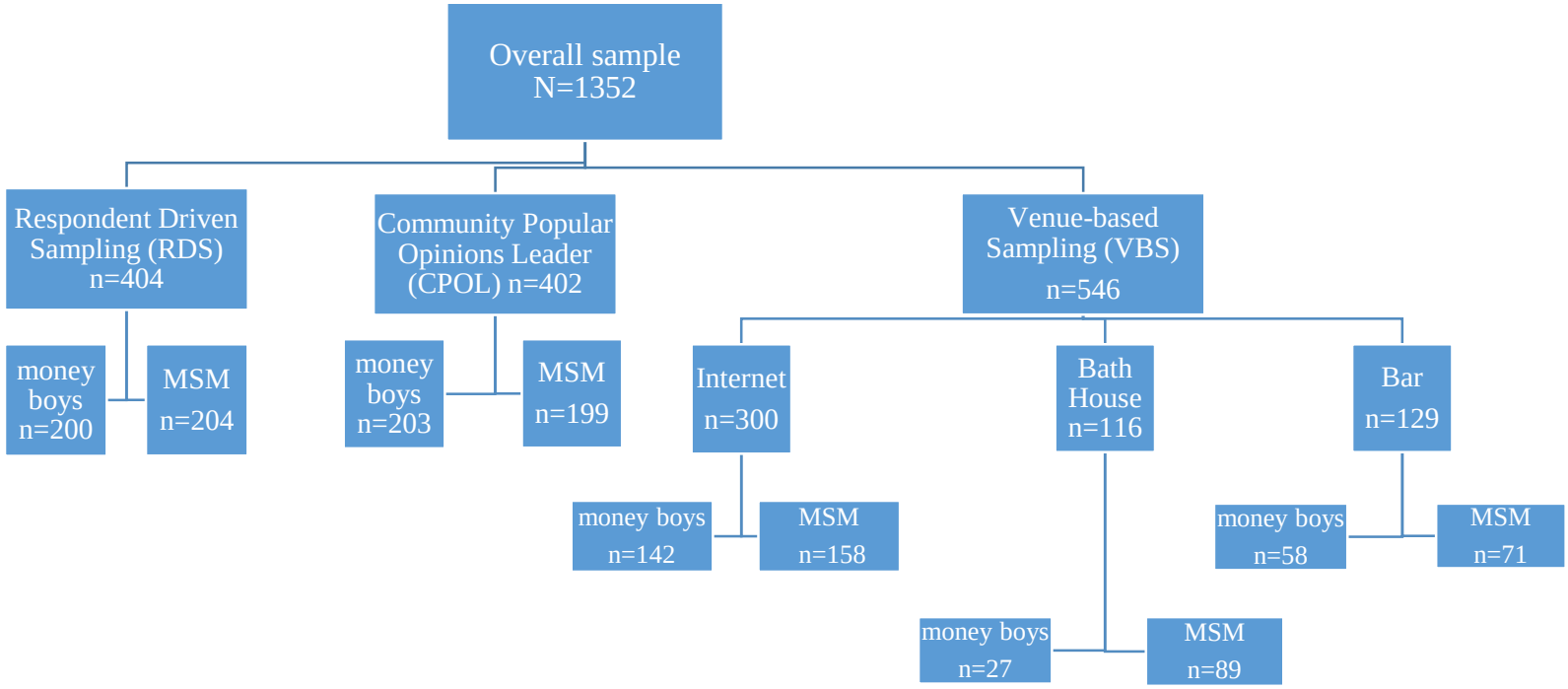
Figure 2 Study Sample, Stratified by Recruitment Method and Participant Type



Measures

Sociodemographic and Behavioral Variables

Participants reported demographic characteristics of date of birth, location of legal residency (*hukou*; Shanghai vs. other), ethnicity, occupation, education level, marital status, monthly income (~US$1=6.3 Yuan at the conclusion of the study), sexual orientation (openly gay or bisexual, closeted gay or bisexual, heterosexual or other), and history of paid and unpaid sex with men and women. Personal and behavioral characteristics of the participants were compared across all three phases of recruitment.

Depression

To screen for depressive symptoms, the short-form version of the Center for Epidemiologic Studies Depression Scale (CES-D-12) (Lach et al., 2009; Radloff, 1977). Twelve statements (i.e. you did not feel like eating, your appetite was poor, or you talked less than usual, etc.) were used to screen for depressive symptoms of the participants [Participant Survey section 2, set 4]. The respondents self-reported how many times in the past week they experienced the stated emotion or behavior. Participants were asked to respond using a four-point range from 1 (rarely of none of the time [less than 1 day in the past week], 2 (Some or little (1-2 days) of the time [1-2 days in the past week]), 3 (occasionally or a moderate amount of time [3-4 days in the past week]), 4 (most or all of the time [5-7 days in the past week]). The CES-D-12's reliability among the sample was found to be acceptable overall (Cronbach's alpha=0.88) and for both participant groups (Cronbach's alpha for general MSM= 0.87, Cronbach's alpha for money boys=0.97) and all three recruitment methods (Cronbach's alpha for RDS recruitment=0.87, Cronbach's alpha for CPOL recruitment=0.90, and Cronbach's alpha for venue-based

recruitment=0.88). Scores from all 12 responses were summed, and a higher score indicated more depressive symptoms for the participant. The CES-D-12 summary score ranged from 12-46. Participants were considered to have 'minimal' depressive symptoms if their sum score was between 12 - 23, 'somewhat elevated' symptoms if their sum score was between 24 - 30, finally, 'very elevated' depressive symptoms if their scores were equal to or above 31 (Lach et al., 2009; Nord et al., 2005).

Intimate Partner Violence

In order to evaluate a participant's history with male-on-male intimate partner violence (IPV), participants were asked a series of questions that measured the level of physical, emotional, social or financial abuse they have received from boyfriends or partners in the past five years. Violence included a range of actions, including; hitting or throwing something at the participant, financial withholding of housing or income, physical or emotional verbal threats, physical verbal threatening of someone they cared for, forced sex, damaged or destroyed property, or threats to disclose the participant's sexuality [participant survey section III, section 1.i-o]. Respondents were asked to answer these questions with the number of boyfriends that had inflicted a particular unwanted physical or emotional violence. The IPV scale's reliability among the sample was found to be acceptable overall (Cronbach's alpha=0.72), for both participant groups (Cronbach's alpha for money boys=0.58, Cronbach's alpha for general MSM=0.76) and for the three recruitment methods (Cronbach's alpha for RDS=0.72, Cronbach's alpha for CPOL=0.73, and Cronbach's alpha for venue-based sampling=0.63). The total number of boyfriends they had experience IPV with was summed, and a higher score indicated greater exposure to IPV for the participant.

Gender Role Scale

Participants were asked to score a series of statements that assessed gender role beliefs held by the study participants. Participants answered 13 statements total. Answers were set on a scale of; false, somewhat false, somewhat true, true or don't know. Statements included; (1) a wife should move out of the house if her husband hits her, (2) a man is never justified in hitting his wife, (3) a husband should have the right to discipline his wife, (4) a man should be arrested if he hits his wife, (5) wife beating is grounds for divorce, (6) the husband has the right to hit his wife when the wife refused to have sex with the husband, etc. [Participant Survey section II, set 3]. Participants were asked to respond using a five-point range from 1(false), 2 (somewhat false), 3 (somewhat true), 4 (true) and 5 (don't know).

Because the participant responses were unreliable due to the reverse coding nature of the question, the following items were removed from the gender role scale;

2.3.a. A wife should move out of the house if her husband hits her.

2.3.b. A man is never justified in hitting his wife.

2.3.e. A man should be arrested if he hits his wife.

2.3.g. Wife beating is ground for divorce.

Therefore, the gender role scale for this study only consisted of nine items. The Cronbach's Alpha for the gender role scale was considered to be acceptable overall (Cronbach's alpha=0.70), acceptable for both participant groups (Cronbach's alpha for general MSM=0.73, Cronbach's alpha for money boys =0.67), and acceptable for the three recruitment methods (Cronbach's alpha for RDS recruitment=0.71, Cronbach's alpha for CPOL recruitment=0.68, and Cronbach's alpha for venue-based

recruitment=0.69). Scores from all nine responses were summed, and a range of 9 – 45 was possible. A higher score indicated more traditional gender role beliefs for the participant and a lower score indicating more modern gender role beliefs.

Sexual Concurrency

A participant's engagement in overlapping relationships with men and/or women was measured within a designated time period; of the last 30 days, 12 months, or the participant's lifetime [participant survey section III.4 d-i]. Both female and male sexual partners are considered in this definition of sexual concurrency. Six statements were used to assess the existence of sexual concurrency for the participant. The statements included, (1) "In the past 30 days, how many male (or female) sexual partners did you have," (2) In the past 12 months, how many male (or female) sexual partners did you have," (3) In your lifetime, approximately how many male (or female) sexual partners have you had?" Participants were asked to respond using a range from none, one to three, four to six, seven to nine, and ten or more sexual partners. Sexual concurrency of the study participants were assessed on the existence of overlapping relationships with any man, in which a participant indicated one or more male sex partners in any timeframe. Additionally, sexual concurrency with a male and female sexual partner was assessed, in which a participant indicated one or more male sex partners in any timeframe and one or more female sex partners in any timeframe. A dichotomous variable was then assigned to the participants that either; (1) had concurrent sexual relationships with men (MSM), or (2) had concurrent sexual relationships with men and women (MSM+ MSW).

Drug Use

A participant's use of drugs was determined by a series of questions, all of which could be answered "no," "don't know/remember," "about _times per day in the past week," or "about _ times per day in the past three months." For the purpose of analysis, participant answers were converted to a dichotomous of "no" or "yes." Therefore, we examined the participants' drug use over the course of the past week or past three months. The statements asked of the participants' drug use were; (1) "Have you ever used drugs (including Ecstasy, white powder or heroin, marijuana, opium, ice toxic, methamphetamine, K powder or cocaine, tranquilizer, stimulants (popper), etc.?", (2) "Have you ever used stimulants (popper)?" (3) "Have you ever used Ecstasy?," (4) "Have you ever used Heroin (white powder)?," (5) "Have you ever used ice toxic or methamphetamine?," and (6) "Have you ever used any drug other than stimulant, Heroin, Ecstasy, or Ice?." (Participant survey section III.5.h-m).

Polydrug Use

A variable was created to determine a participant's use of multiple drugs over the span of their lifetime. Participants were asked if they have ever used drugs, stimulants, Ecstasy, Heroin, or methamphetamines, as described above (Participant survey section III.5.h-m). If participants answered, "yes" to having ever taken stimulants, ecstasy, and methamphetamines, then they were considered to be a "polydrug" user over the course of their lifetime. Heroin was left out of this variable because only seven participants had reported use of this drug.

Data Collection Procedures

Each recruited participant was asked to take a pencil-and-paper survey in Chinese, which took between 30-45 minutes to complete. The questionnaire consisted of three sections; (1) basic information and social support, (2) experience as a gay or bisexual person, attitudes about sex, gender role beliefs, CES-D Short Form Depression Screening Questionnaire, and (3) attitudes about health issues, health status and well-being, testing and treatment for STDs, sexual behaviors, and substance use/abuse.

Treatment of Data

Data entry was completed using the Statistical Package for Social Science (SPSS) version 19.0. After data collection, survey responses were cleaned, verified, and entered into SPSS. Statistical analyses were completed using Statistical Analysis System (SAS) version 9.3 and Statistical Package for Social Science (SPSS) version 19.0.

Initial data analyses were conducted in five steps;

1. Basic univariate statistics were conducted for MSM and money boys, and among all three recruitment methods. Demographic variables, prevalence of IPV, rates of depression, held gender role beliefs, and the presence and amount of sexual concurrency were assessed for all participants.
2. Presence of outliers was assessed among the basic univariate statistics for all participants. Some outliers were determined for the variables assessing intimate partner violence and sexual concurrency. These outliers were not discarded because participants were allowed to write-in a number in response to these survey questions (Appendix A, Section III.1, III.4).

3. Normality of the distribution was assessed across all variables. More specifically, variable distributions yielding a skewness value of less than one, and a kurtosis value of less than one were considered to be normal.
4. Frequency tables were generated to account for missing data among the sample.
5. Explanation of missing data was given for any variables. Some missing data was reported for variables. For these variables, the missing data was appropriate because a few of the questions did not apply to every survey participant.

Preliminary Analyses

First, descriptive statistics of the sample were conducted for each participant type (general MSM and money boys) and each of the three recruitment methods. Sociodemographic and behavioral variables consisted of; date of birth, age (in years) of the first sexual contact with a man and age (in years) of the first sexual contact with a woman, ethnicity (Han or other), location of legal residency (*hukou*; Shanghai vs. other), education level, monthly income, sexual orientation (openly gay or bisexual, closeted gay or bisexual, heterosexual or other), and marital status (married or other).

Second, the distributions for the 12-item CES-D screening was determined for general MSM and money boys for each recruitment type. Additionally, the distribution for the 13-item gender role scale was determined for the general MSM and money boy participants, and for each of the three recruitment methods. Likewise, the prevalence of intimate partner violence was determined for each recruitment method, as well as for general MSM and money boys. Frequency tables for all seven intimate partner violence-related survey questions and the total amount of intimate partner violence each

participant experienced were generated for all three recruitment methods, and stratified by participant type (general MSM and money boy). For the variable of sexual concurrency, the number of reported partners (no partners, one to three partners, four to six partners, seven to nine partners, and ten or more partners) with men and/or women in the last 30 days, and with men and/or women in a participant's lifetime was analyzed and frequency tables were generated. The presence of sexually concurrent relationships was determined by a participant having a sexual relationship with only men, only women, or both men and women was assessed over the last 30 days and a lifetime. Frequency tables for sexually concurrent relationships with both men and women over the last 30 days and lifetime were generated for money boys and general MSM, as well as for each recruitment method. Lastly, frequency tables were generated for drug use among the sample subsets (RDS money boys, RDS MSM, CPOL money boys, CPOL MSM, venue-based money boys, and venue-based MSM). Additional frequency tables were generated for drug use among money boys and general MSM, as well as drug use among the participants of all three recruitment methods.

Third, to assess if there is a significant difference among the descriptive statistics between the general MSM and money boy populations, or within each recruitment method, an ANOVA was conducted for continuous variables and a Chi-square test was conducted for categorical variables. In order to examine if there is a significant difference with the measure of sexual concurrency between general MSM and money boys, or among each recruitment method, a layered Chi-square analysis was conducted. Significant differences were set at a value of α=.05.

Fourth, for continuous variables, testing for a significant difference between general MSM and money boys, and between recruitment methods was conducted with a factorial ANOVA. In order to make multiple comparisons between the means of the six groups (RDS money boys, RDS MSM, CPOL money boys, CPOL MSM, venue-based money boys, and venue-based MSM), a Tukey HSD (honest significant difference) test was conducted for the following variables; age, age at first sexual contact with men, age at first sexual contact with women, CES-D-12 summary score, and the 'minimal,' 'somewhat elevated,' and 'highly elevated' depressive symptom variables.

Fifth, a Chi-square test was conducted to assess if there was a significant difference between the prevalence of IPV between general MSM and money boys. Additionally, an ANOVA was conducted to compare the means across recruitment methods. All three general MSM and three money boy groups from the three recruitment methods; RDS, CPOL, and venue-based, were compared against each other to assess the mean IPV experienced by each group.

Sixth, simple linear regressions were conducted to assess correlation between the outcome: depression, and the predictors: intimate partner violence, gender role beliefs, drug use and sexual concurrency. Additionally, a simple linear regression was conducted to assess correlation between depression and the demographic variables. Of particular interest, were the correlations between depression and the moderating variables in this study; participant type and recruitment method. The Pearson correlation coefficient and accompanying p-value was reported for the continuous independent variables of age, age at first sexual contact with men, and age at first sexual contact with women. The Spearman correlation coefficient and accompanying p-value was reported for the

independent variables that were categorical; ethnicity, hukou, level of education, income, sexual orientation, marital status, participant type, and recruitment method. The following strengths were associated with the value of the correlation coefficient; a "strong" correlation has an r-value of +/-0.5 to 1.0, a "moderate" correlation has an r-value of +/-0.3 to 0.5, a "weak" correlation has an r-value of +/-0.1 to 0.3, and a nonexistent or "very weak" correlation has an r-value of -0.1 to 0.1.

Seventh, multivariate logistic regressions were conducted to assess the association of demographic variables, the psychosocial variables (depression, intimate partner violence, sexual concurrency, and gender role beliefs) and the lifetime use of drugs. The adjusted odds ratios (AOR) and 95% confidence interval, and the accompanying p-value were reported for the multivariate logistic regressions. In addition, the Nagelkerke R^2 value was reported with each block one of the model.

Eighth, multivariate logistic regressions were conducted to assess the association of intimate partner violence, gender role beliefs, drug use and sexual concurrency with depression. The adjusted odds ratios (AOR) and 95% confidence interval, and the accompanying p-value were reported for the multivariate logistic regressions. In addition, the Nagelkerke R^2 value was reported with each block two of the model, allowing the change of the Nagelkerke R^2 value to be visible with the addition of the psychosocial health problems to the demographic characteristics of the sample.

Specific Analysis by Hypothesis

This study was designed to test the following hypotheses, and the specific analysis for each respective hypothesis is described here:

1. A participant's level of held gender role beliefs predicts or reflects a participant's depressive symptoms.

After determining the distribution of the responses to the nine gender role items in the survey (Participant survey 3.2.3.c, d, f, h-m), the gender role belief summary score was calculated. The gender role belief summary score and the CES-D-12 summary score were correlated, and the Pearson correlation coefficient and p-value were determined. The gender role belief summary score was entered into block 2 of the multivariate logistic regression model, and the adjusted odds ratios were assessed for an association between gender role beliefs and the dependent variables of drug use ever, MSM 30 days, MSM+MSW 30 days, IPV 1-2 forms of abuse, and IPV 2+ forms of abuse.

2. If a participant has had concurrent sexual relationships, then he is more likely to have depressive symptoms.

The quantity of sexual relationships a participant had in the last 30 days and over the course of their lifetime was first determined for each participant. Next, the type of concurrent sexual relationship in which a participant was engaging (only male sexual partners, only female sexual partners, or both female and male sexual partners) was determined for each participant. Then, the variables indicating the number of male sexual partners a participant has had in the last 30 days (MSM 30 days) and the type of concurrent sexual relationships in which a participant was engaging over the last 30 days (MSM+MSW 30 days) was correlated with the CES-D-12 summary score, and the Spearman correlation coefficient and p-value were determined. CES-D-12 summary score was entered into block 2 of the multivariate logistic regression model, and the adjusted odds ratios were assessed for an association between the CES-D-12 summary

score and the dependent variables of drug use ever, MSM 30 days and MSM+MSW 30 days.

3. A participant's amount of male-on-male IPV that he has experienced affects his level of depression.

The type of IPV that a participant had endured, and the number of male partners that inflicted abuse on the participant over the course of their lifetime was first determined for each participant. Next, the male-on-male IPV summary score was calculated for each participant. Then, the male-on-male IPV summary score was correlated with the CES-D-12 summary score, and the Pearson correlation coefficient and p-value were determined. A multivariate logistic regression analysis was conducted in two blocks. IPV was broken down into two dependent variables; one to two forms of IPV (IPV 1-2 forms of abuse), and greater than two forms of IPV (IPV >2 forms of abuse). In block one, the demographic characteristics were regressed on each of the IPV dependent variables, and the adjusted odds ratios were assessed for an association between the demographic characteristics and IPV. Finally, the CES-D-12 summary score was entered into block 2 of the multivariate logistic regression model, and the adjusted odds ratios were assessed for an association between the CES-D-12 summary score and the dependent variables of; drug use ever, MSM 30 days, MSM+MSW 30 days, IPV 1-2 forms of abuse, and IPV 2+ forms of abuse.

4. If a participant has used drugs over the course of his life, then he is more likely to have depressive symptoms.

The initial step of analysis for this hypothesis was to determine if the participants had used any drugs over the course of their life. Next, the type of drug use (stimulants,

methamphetamines/ice, Ecstasy, or any other than those listed) was determined, as well as the quantity of drugs used on a daily basis over the last three months. Then, the categorical variable of "drug use ever" was correlated with the CES-D-12 summary score, and the Spearman correlation coefficient and p-value were determined. A multivariate logistic regression analysis was conducted in two blocks. In block one, the demographic characteristics were regressed on the categorical variable of "drug use ever" and the adjusted odds ratios were assessed for an association between the demographic characteristics and drug use ever. Finally, the CES-D-12 summary score was entered into block 2 of the multivariate logistic regression model, and the adjusted odds ratios were assessed for an association between the CES-D-12 summary score and the dependent variables of; drug use ever, MSM 30 days, MSM+MSW 30 days, IPV 1-2 forms of abuse, and IPV 2+ forms of abuse.

5. If a participant experiences traditional gender role beliefs, concurrent sexual relationships, male-on-male IPV, and drug use then does a syndemic production of depression exists amongst MSM and money boys in Shanghai, China?

A multivariate logistic regression was conducted among the dependent variables of; drug use ever, the quantity of male sexual partners a participant had over the last 30 days (MSM 30 days), the type of concurrent sexual relationship in which a participant was engaging over the last 30 days (only male sexual partners, only female sexual partners, or both female and male sexual partners; MSM+MSW 30 days), one to two forms of IPV (IPV 1-2 forms of abuse), and greater than two forms of IPV (IPV >2 forms of abuse) with the following independent variables; the CES-D-12 item summary score, drug use

ever, daily drug use in the last three months, MSM 30 days, MSM+MSW 30 days, the IPV summary score, and the gender role belief summary score. The adjusted odds ratio and p-value were calculated for each association. The Nagelkerke R^2 value was calculated for each model, and the Nagelkerke R^2 values were compared between block one (demographic characteristics) and block two (psychosocial health problems) of each model.

Chapter Four

RESULTS

Sample Characteristics

In total, this study enrolled 1,352 MSM and money boys to participate; with 721 MSM and 631 money boys participating and completing the Shanghai Men's Study survey (Appendix A). Overall, the average age of these men is 29.52 ± 9.60 years. The overall age at first sexual contact with a man for the sample of 1,352 participants is 20.02 ± 5.97 years. The average age of the first sexual contact with a woman was 20.43 ± 4.33 years for the overall sample. (Table 1a).

In addition to age, the participant's age at first sexual contact with men, and the participant's first sexual contact with women, the participants were asked to disclose their ethnicity, *hukou* (Shanghai or other), level of education, monthly income, sexual orientation, and marital status. Overall, 96.4% of the men surveyed claimed a Han ethnicity, 22.7% of the participants claimed a Shanghai legal residency status (*hukou*), and 77.1% claimed an "other" *hukou*. Overall, 31.4% of the participating men had up to a middle school level of education, 27.2% attained a high school or equivalent level of education, and 30.3% of the men had a college degree or higher. Only 5.0% of the sample earned less than 1000 Yuan per month, 35.9% earned between 1000 and 2999 Yuan per month, 33.7% earned between 3000 and 4999 per month, and 25.1% earned over 5000 Yuan per month. In terms of sexual orientation, 8.9% of the men identified as openly gay or bisexual, 84.2% identified as closeted gay or bisexual, and 6.8% have an "other" orientation. The majority of the men in the sample were single, divorced, separated, in a

relationship, or living with someone, while only 16.3% of the men were married to a woman. (Table1a).

Demographic Differences Based on Participant Type and Recruitment Method

For RDS recruitment, money boys were, on average, 24.29 ± 4.94 years, and MSM was, on average, 34.90 ± 11.57 years. The CPOL recruitment method recruited money boys that were on average 24.71 ± 4.89 years, and the MSM was 30.69 ± 9.22 years. Venue-based recruited money boys were 28.16 ± 8.39 years of age, and MSM were 32.64 ± 10.48 years old. A factorial ANOVA indicated that the age of each participant type (money boys or MSM) and recruitment method was significantly different ($F=14.5$, $p=.000$).

Money boys recruited by the RDS method experienced their first sexual contact with men at the age of 18.87 ± 4.71years, and MSM at 20.84 ± 7.06 years. For CPOL recruitment, money boys had their first sexual contact with men at 17.38 ± 3.98 years, and MSM at 20.44 ± 6.33 years. Venue-based recruited money boys experienced their first sexual contact with a man at 20.57 ± 5.94 years, and MSM at 21.22 ± 6.20 years of age. A factorial ANOVA indicated that the age at first sexual contact with a man for each participant type (money boys or MSM) and recruitment method was significantly different ($F=4.94$, $p=.007$).

RDS recruited money boys experienced their first sexual contact with a woman at the age of 18.83 ± 3.17 years, and MSM at 21.86 ± 5.12 years. The CPOL recruited money boys experienced their first sexual contact with a woman at 18.11 ± 2.91 years, and MSM at 21.02 ± 4.21 years of age. Lastly, venue-based recruited money boys experienced their first sexual contact at 19.83 ± 3.81 years of age, and MSM at 22.16 ±

4.48 years of age. A factorial ANOVA indicated that the age at first sexual contact with a woman for each participant type (money boys or MSM) and recruitment method was not significantly different (F=.70, p=.497). (Table 1a).

The majority of all participants, regardless of participant type or recruitment method were of the Han ethnicity (96.4%). Of the participants recruited by RDS, 93.5% of money boys were Han, and 98.5% of MSM were Han. CPOL recruited money boys that were 94.6% Han, and 95.4% of MSM were Han. Money boys recruited by the Venue-based recruitment method were mostly Han (93.4%), and the majority of MSM were also Han (95.6%).

Very few money boys recruited by RDS had a Shanghai legal residency status (2.5%), while 37.8% of MSM recruited by RDS had a Shanghai *hukou*. CPOL recruited money boys were 26.6% Shanghai *hukou*, and 51.7% of CPOL MSM had a Shanghai legal residency status. The venue-based recruitment method recruited money boys that were mostly of the "other" *hukou* (96.1%), while fewer venue-based MSM had an "other" *hukou* (62.0%).

The level of education within the sample varied by both recruitment method and participant type. Of the money boys recruited by RDS, 40.2% had up to a middle school education level, 45.2% had a high school or equivalent degree, and 14.6% had a college degree or higher. Of the MSM recruited by RDS, 33.5% had up to a middle school education level, 35.0% had a high school or equivalent degree, and 31.5% had a college degree or higher. CPOL recruited money boys were mostly up to a middle school education (45.3%) or a high school or equivalent education (49.8%), with only 4.9% having a college degree or higher. CPOL recruited MSM were mostly had college degree

or higher (61.8%), or a high school or equivalent education (24.6%), with only 13.6% had up to a middle school education. Of the money boys recruited by venue-based sampling, 36.4% had up to a middle school education level, 49.1% had a high school or equivalent degree, and 14.5% had a college degree or higher. Of the MSM recruited by venue-based sampling, 23.3% had up to a middle school education level, 29.3% had a high school or equivalent degree, and 47.5% had a college degree or higher.

A participant's monthly income also varied by participant type and recruitment method. Only 3.0% of RDS recruited money boys made less than 1,000 Yuan per month, while 44.7% made 1,000 – 2,999 Yuan per month, 35.7% made 3,000-4,999 Yuan per month, and 16.6% made more than 5,000 Yuan per month. Only 9.3% of RDS recruited MSM made less than 1,000 Yuan per month, while 56.4% made 1,000 – 2,999 Yuan per month, 21.6% made 3,000-4,999 Yuan per month, and 12.8% made more than 5,000 Yuan per month. Most of the money boys recruited by the CPOL method made between 3,000 and 4,999 Yuan per month (46.5%), just as most MSM made between 3,000 and 4,999 Yuan per month (35.4%). Only .4% of venue-based sampling money boys made less than 1,000 Yuan per month, while 24.6% made 1,000 – 2,999 Yuan per month, 33.8% made 3,000-4,999 Yuan per month, and 41.2% made more than 5,000 Yuan per month. Only 4.1% of venue-based sampling recruited MSM made less than 1,000 Yuan per month, while 35.5% made 1,000 – 2,999 Yuan per month, 31.4% made 3,000-4,999 Yuan per month, and 28.9% made more than 5,000 Yuan per month.

Across all recruitment methods and participant types, the majority of the participants were closeted gay or bisexual (84.2%). RDS recruited money boys were mostly a closeted gay or bisexual (73.5%), 13.0% were openly gay or bisexual, and

13.5% were homosexual or "other." RDS recruited MSM were also mostly a closeted gay or bisexual (85.3%), 11.3% were openly gay or bisexual, and 3.4% were homosexual or "other." Money boys recruited by CPOL were mostly closeted gay and bisexual (75.4%), 6.4% were openly gay or bisexual, and 18.2% were heterosexual or "other." MSM recruited by CPOL were mostly closeted gay and bisexual (90.0%), 9.0% were openly gay or bisexual, and 1.0% were heterosexual or "other." Lastly, venue-based recruited money boys were mostly closeted gay or bisexual (87.8%), 6.6% were openly gay or bisexual, and 5.7% were heterosexual or "other." Venue-based recruited MSM were mostly closeted gay or bisexual (89.6%), 11.4% were openly gay or bisexual, and 2.2% were heterosexual or "other."

The final demographic variable, marital status, also showed variation across participant types and recruitment methods. The majority of money boys recruited from RDS were not married (95%), while 5.0% were married. Similarly, MSM recruited from RDS were not married (76.0%), while 24.0% were married. CPOL recruited money boys were mostly not married (93.4%), while 6.6% were married. CPOL recruited MSM, similarly, were mostly unmarried (82.8%), and the rest were married (17.2%). Money boys recruited from venue-based sampling were mostly unmarried (75.8%), and the remainder were married (16.7%). Lastly, MSM recruited from venue-based sampling were mostly unmarried (83.6%), and the remainder were married (16.3%). (Table 1a).

Demographic Differences between MSM and money boys

The money boys sampled in this study were, on average, 25.8±6.6 years, while MSM were 32.7±10.6 years of age, yielding a significant difference between the age of

money boys and MSM (F=139.6, p=.000). The age of first sexual contact with men for money boys was 19.0±5.2 years, which was significantly different that MSM at 20.9±6.5 years of age (F=21.1, p=.000). Money boys experienced their first sexual contact with women at 19.0±3.4 years, while MSM had their first sexual contact with women at 21.8±4.7 years old, yielding a significant difference (F=39.6, p=.000). (Table 1b).

The majority of money boys were of the Han ethnicity (95.3%), which was significantly different than the percentage of MSM who identified as Han (97.4%, X^2=74.2, p=.000). The sample's *hukou* was also significantly different between money boys and MSM (X^2=260.7, p=.000), with only 3% of money boys claiming Shanghai as their place of legal residency, and 40.0% of MSM claiming a Shanghai legal residency status. The majority of money boys attained a high school or equivalent of education (48.0%), while the majority of MSM attained a college degree or higher (46.9%). The level of education attained by money boys and MSM in this sample was significantly different (X^2=203.5, p=.000). (Table 1b).

In terms of monthly income, 1.4% of money boys earned less than 1,000 Yuan per month, 32.5% earned between 1,000 and 2,999 Yuan per month, 38.4% between 3,000 and 4,999 Yuan per month, and 27.4% earning above 5,000 Yuan per month. MSM earned a significantly different monthly income (X^2=44.3, p=.000) with 8.2% earning less than 1,000 Yuan per month, 38.8% earning 1,000-2,999 Yuan per month, 29.7% earning between 3,000 and 4,999 per month, and 23.2% earning more than 5,000 Yuan per month. The majority of money boys identified with heterosexual or other (57.0%), 37.0% of money boys identified as closeted gay or bisexual, and 8.6% identified as closeted gay or bisexual. The majority of MSM identified as a closeted gay or bisexual

(88.8%), while 9.3% identified as openly gay or bisexual, and 2.2% identified as heterosexual or other. The sexual orientation of money boys and MSM was significantly different (X^2=61.8, p=.000). The marital status was also significantly different between money boys and MSM, with only 9.7% of money boys married, and 25.0% of MSM are married (X^2=59.2, p=.000). (Table 1b).

Demographic Differences Based on Recruitment Method

Three recruitment methods were utilized in this study; RDS, CPOL, and venue-based sampling. RDS recruited 404 participants, CPOL recruited 402 MSM, and venue-based sampling recruited 546 participants. The average age of RDS participants was 29.7±10.4 years; CPOL participants were 27.7±7.9 years of age, and venue-based participants were 30.8±9.9 years. The average age of participants was significantly different between the recruitment methods (F=12.2, p=.000). Participants recruited by RDS had their first sexual contact with a man at 19.9±6.1 years of age; CPOL participants had their first sexual contact with a man at the age of 18.9±5.5 years, and venue-based participants at the age of 21.0±6.1 years. Again, the age of first sexual contact with a man was significantly different between the recruitment methods (F=14.2, p=.000). The RDS participant's average age at first sexual contact with women was 20.4±4.5 years; CPOL participant's average age at first sexual contact with women was 19.5±3.9 years, and venue-based men had their first sexual contact with women at 21.1±4.4 years of age. Once again, the age at first sexual contact with women significantly differed between recruitment methods (F=9.0, p=.000). (Table 1c).

The majority of RDS participants were of the Han ethnicity (95.5%), as were the CPOL participants (100%), and the venue-based participants (94.7%). The ethnicity of the participants was significantly different based on the recruitment method (X^2=259.4, p=.000). The legal residency status (*hukou*) for RDS recruited participants were 20.3% Shanghai, and 79.7% "other." Similarly, the *hukou* for CPOL participants was 23.9% Shanghai, and 75.6% "other." And the majority of venue-based participants were "other" (74.4%) while the remainder had a Shanghai legal residency status (23.6%). The *hukou* of the participants based on recruitment method were not significantly different (X^2=1.98, p=.372). (Table 1c).

Of RDS recruited participants, 36.6% had up to a middle school education level, 39.9% had a high school or equivalent degree, and 23.0% had a college degree or higher. CPOL recruited participants mostly had a high school or equivalent education (37.3%), while 29.6% had up a middle school education, and 33.1% had a college degree or higher. Of the venue-based participants, 28.8% had completed up to middle school level of education, 27.5% had completed high school or had an equivalent degree, and 24.4% had a college degree or higher. The level of education attained by the participants in this study was significantly different between the recruitment methods (X^2=19.2, p=.014). The majority of RDS participants made 1,000-2,999 Yuan per month (50.5%), 28.5% made 3,000-4,999 Yuan per month, and 14.6% made more than 5,000 Yuan per month. Only 7.2% of CPOL participants made less than 1,000 Yuan per month, 27.9% made 1,000-2,999 Yuan per month, 40.8% made 3,000-4,999 Yuan per month, and 23.6% made more than 5,000 Yuan per month. Lastly, 2.6% of venue-based participants made less than 1,000 Yuan per month, 31.0% made 1,000-2,999 Yuan per month, 32.4% made

3,000-4,999 Yuan per month, and 34.1% made more than 5,000 Yuan per month. The monthly income among the participants significantly differed between the recruitment methods (X^2=91.5, p=.000). (Table 1c).

The sexual orientation of the majority of the participants was closeted gay or bisexual (84.2%), yet the sexual orientation of the participants significantly differed among the recruitment methods (X^2=60.9, p=.000). RDS recruited participants were mostly closeted gay or bisexual (79.5%), 12.2% were openly gay or bisexual, and 8.4% were heterosexual or "other." Similarly, 7.7% were openly gay or bisexual, 82.6% were closeted gay or bisexual, and 9.7% were heterosexual or "other." Of the venue-based participants, 7.5% were openly gay or bisexual, 88.8% were closeted gay or bisexual, and 3.7% were heterosexual or "other." The majority of RDS recruited participants were unmarried (85.4%), while 14.6% were married. Similarly, 86.6% of CPOL participants were unmarried, and 11.7% were married. Lastly, 21.1% of venue-based participants were married, while 78.9% were unmarried. The marital status of the MSM in this study varied significantly between the recruitment methods (X^2=45.7, p=.000). (Table 1c).

Demographics of the Venue-Based Sampling Participants

Three different venues were utilized within the venue-based sampling method; Internet applications (QQ, JACKD and GRINDR), bars, and bathhouses. The Internet applications recruited 300 MSM, while 129 MSM were recruited from bars, and 117 MSM were recruited from bathhouses in Shanghai, for an overall venue-based sample of 546 MSM. The average age of the study participants recruited from the venue-based sampling was 30.8±9.9 years. Internet recruited men were 29.9±9.1 years of age; bar recruited men were 28.4±8.8 years old, and bath house recruited men were 35.7±11.3

years of age. The age of the venue-based recruited men were significantly different between venues (F=21.2, p=.000). The age of first sexual contact with men for internet recruited MSM was 21.2±6.1 years; 19.6±6.1 years for MSM recruited from bars, and 21.8±5.8 years of age for bath house recruited MSM. The participant's age of first sexual contact with men was significantly different between the venues (F=4.6, p=.011). The age of first sexual contact with women for Internet recruited MSM was 21.2±4.3 years; 20.0±4.5 years for MSM recruited from bars, and 22.0±4.3 years of age for bathhouse recruited MSM. The participant's age of first sexual contact with women was significantly different between the venues (F=4.2, p=.016). (Table 1e).

The majority of venue-based sampled participants were Han (94.7%), with the majority of Internet recruited MSM (93.7%), 93.8% of bar recruited men were Han, and 98.3% of bathhouse-recruited men were Han. The ethnicity across the venues in the venue-based recruitment method was not significantly different (X^2=3.8, p=.146). The legal residency status (*hukou*) of the venue-based MSM was 23.6% Shanghai, and 76.4% "other." The majority of internet recruited MSM were of an "other" *hukou* (78.3%), as were bar recruited men (77.5%), and bathhouse recruited men (70.1%). The *hukou* of the MSM recruited from the venue-based sampling was not significantly different amongst the venues (X^2=34.1, p=.397). (Table 1e).

The level of education attained by the Internet venue was 25.3% middle school or less, 39.0% high school or an equivalent degree, and 35.7% of men with a college degree or higher. The level of education attained by the bar venues was 23.3% middle school or less, 33.3% high school or an equivalent degree, and 43.4% of men with a college degree or higher. Lastly, 28.8% of bath house recruited men had completed up to a middle

school level of education, 37.5% had a high school or equivalent degree, and 33.7% had completed college or a higher degree. The level of education attained by venue-based recruited men differed significantly among the venue types (X^2=29.7, p=.000). The monthly income among the venue-based recruitment method also varied significantly (X^2=49.1, p=.000). Of the Internet recruited men, 2.0% made less than 1,000 Yuan per month, 23.3% made 1,000-2,999 Yuan per month, 36.3% made 3,000-4,999 Yuan per month, and 38.3% made more than 5,000 Yuan per month. Of the bar recruited men, 4.7% made less than 1,000 Yuan per month, 27.1% made 1,000-2,999 Yuan per month, 27.1% made 3,000-4,999 Yuan per month, and 41.1% made more than 5,000 Yuan per month. Finally, of the bathhouse recruited 1.7% made less than 1,000 Yuan per month, 54.7% made 1,000-2,999 Yuan per month, 28.2% made 3,000-4,999 Yuan per month, and 15.4% made more than 5,000 Yuan per month. (Table 1e).

The majority of venue-based MSM were closeted gay or bisexual (88.8%), with 89.0% of internet recruited men reporting to be closeted gay or bisexual, 85.3% of bar recruited men being closeted gay or bisexual, and 92.3% of bathhouse recruited men being closeted gay or bisexual. The sexual orientation did not vary significantly among the venue types (X^2=14.0, p=.173). The majority of venue-based sampled MSM were unmarried (78.9%), with 80% of internet recruited men being unmarried, 88.4% of bar recruited men being unmarried, and 65.8% of bath house recruited men being unmarried. The marital status among the venue-based recruitment method varied significantly among the venue types (X^2=30.6, p=.000).

Description of Depression among the Sample

The rate of depression among the 1,352 participants of this sample was determined with a series of 12 questions in the participant survey, adapted from the short-form version of the Center for Epidemiologic Studies Depression Scale (CES-D-12). The most common response by the participants in the study to the "you were bothered by things that usually don't bother you," was "some or little of the time (1-2 days in the past week)" (47.7%). Participant most commonly responded "rarely or none (less than 1 day in the past week)" to "you did not feel like eating, your appetite was poor" (54.3%). The most common response for "you felt that you could not shake off the blues even with help from your family or friends," was "rarely or none (less than 1 day in the past week)" (48.2%). Participants most frequently responded "rarely or none (less than 1 day in the past week)" (40.9%) or, "some or little of the time (1-2 days in the past week)" (40.7%) to the survey question "you had trouble keeping your mind on what you were doing."

The majority of the participants felt that they were depressed 1-2 days per week (46.1%), and felt everything they did was an effort less than one day in the past week (47.0%). Participants felt fearful less than one day a week (60.2%). In response to the survey question, "your sleep was restless," participant responses were rather evenly distributed with 33.4% having restless sleep less than 1 day in past week, 31.4% having restless sleep 1 – 2 days in the past week, and 22.6% having restless sleep 3 – 4 days in the past week. The majority of participants talked less than usual less than one day in the past week (49.9%), while 37.6% felt lonely less than one day a week, and 32.9% felt lonely 1 – 2 days in the past week. The majority of the participants felt sad either less than one day in the past week (37.0%) or 1 – 2 days in the past week (38.3%). Finally,

the majority of the participants responded “less than 1 day in the past week” to the survey question, “you could not get ‘going’” (60.5%). (Table 2.1).

The overall CES-D-12 summary score was calculated for all participants, and the average was CES-D-12 depression score was 20.4±6.3 for the entire sample. There was variation across the participant types and recruitment methods. The overall CES-D-12 summary score for RDS recruited money boys was 22.5±6.1, while RDS recruited MSM scored 19.4±5.7. CPOL recruited money boys summed a CES-D-12 score of 22.5±6.9, and CPOL MSM had CES-D-12 summary score of 18.6±5.8. Lastly, venue-based money boys had a CES-D-12 summary score of 20.4±6.3, and MSM had a summary score of 19.1±6.0. A factorial ANOVA revealed that the CES-D-12 summary scores for each of these sample subsets were significantly different ($F=4.4$, $p=.004$). (Table 2.1).

Rate of Depression among Money Boys and General MSM

The type of participant (money boy or general MSM) was a natural point of comparison in this study, given that general MSM and engaging in transactional sex with money boys. Therefore, rates of depression among money boys and general MSM were compared. The CES-D-12 item, “you were bothered by things that usually don’t bother you,” was most frequently responded by money boys as “some or little (1 – 2 days in the past week)” (47.8%), as did MSM (47.7%). The responses for this CES-D item varied significantly between money boys and MSM ($X^2=12.3$, $p=.006$). In response to the prompt, “you did not feel like eating, your appetite was poor,” money boys most frequently responded “rarely or none (less than 1 day in the past week)” (48.9%), as did MSM (59.2%). The responses for this CES-D item also varied significantly between money boys and MSM ($X^2=18.4$, $p=.000$). In response to the prompt, “your felt that you

could not shake off the blues even with help from your family or friends," money boys most frequently responded "rarely or none (less than 1 day in the past week)" (44.9%), as did MSM (51.3%). The responses for this CES-D item also varied significantly between money boys and MSM (X^2=12.0, p=.007). Money boys most frequently responded, "rarely or none (less than 1 day in the past week)" (36.1%) or "some or little (1 – 2 days in the past week)" (40.7%) to the CES-D prompt, "you had trouble keeping your mind on what you were doing." The money boys' responses to this prompt was significantly different than the responses from MSM, of whom 45.1% responded "rarely or none (less than 1 day in the past week)" and 40.6% responded "some or little (1 – 2 days in the past week)" (X^2=21.9, p=.000). (Table 2.2)

Money boys most frequently felt depressed 1- 2 days in the past week (46.0%), and 46.3% of MSM also felt depressed 1- 2 days in the past week; the responses from money boys and MSM were significantly different (X^2=37.3, p=.000). In response to "you felt everything you did was an effort," money boys most frequently responded "less than 1 day in the past week" (42.1%) and "some or little (1 – 2 days in the past week)" (39.4%), and MSM also responded most frequently responded "less than 1 day in the past week" (51.5%) and "some or little (1 – 2 days in the past week)" (35.3%), causing a significant difference between the responses of money boys and MSM (X^2=21.5, p=.000). (Table 2.2)

In response to the CES-D-12 item, "you felt fearful," 53.2% of money boys responded that they felt fearful less than 1 day per week, as did the majority of MSM (66.4%). The responses from money boys and MSM were significantly different for this item (X^2=34.9, p=.000). The distribution of responses from the money boys and MSM

for the CES-D item "your sleep was restless" was larger with 24.4% of money boys responding "less than 1 day in the past week," 30.0% responding "some or little (1 – 2 days in the past week)," 28.1% responding "occasionally (3-4 days in the past week)," and 17.0% responding "most or all of the time (5-7 days in the past week)." MSM responded to this item with 41.1% responding "less than 1 day in the past week," 32.8% responding "some or little (1 – 2 days in the past week)," 17.9% "occasionally (3-4 days in the past week)," and 7.9% responding "most or all of the time (5-7 days in the past week)." The responses for "your sleep was restless" were significantly different between money boys and MSM (X^2=70.4, p=.000). (Table 2.2)

Of the most frequent responses, 44.4% of money boys and 54.9% of MSM responded "rarely or none (less than 1 day in the past week)" to the CES-D-12 item, "you talked less than usual" (X^2=16.3, p=.001). The distribution of responses from the money boys and MSM for the CES-D-12 item "you felt lonely" was larger with 31.9% of money boys responding "less than 1 day in the past week," 32.2% responding "some or little (1 – 2 days in the past week)," 23.0% responding "occasionally (3-4 days in the past week)," and 12.9% responding "most or all of the time (5-7 days in the past week)." MSM responded to this item with 42.7% responding "less than 1 day in the past week," 33.6% responding "some or little (1 – 2 days in the past week)," 16.2% "occasionally (3-4 days in the past week)," and 7.5% responding "most or all of the time (5-7 days in the past week)." The responses for "you felt lonely" were significantly different between money boys and MSM (X^2=28.3, p=.000). (Table 2.2)

Money boys felt sad "rarely or none (less than 1 day in the past week)" (29.0%) and "some or little (1 – 2 days in the past week)" (38.8%), and MSM felt sad "rarely or

none (less than 1 day in the past week)" (44.0 %) and "some or little (1 – 2 days in the past week)" (37.9%). The responses for "you felt sad" were significantly different between money boys and MSM (X^2=54.1, p=.000). Lastly, money boys most frequently responded "rarely or none (less than 1 day in the past week)" (50.1%), as did MSM (69.6%), to the CES-D-12 item "you could not get going." The responses for this item were significantly different between money boys and MSM (X^2=69.5, p=.000). (Table 2.2)

The CES-D-12 item summary score was significantly different between money boys and MSM (F=66.3, p=.000). The CES-D-12 item summary score for money boys was 21.8±6.5, and the summary score for MSM was 19.0±5.9. (Table 2.2)

Rate of Depression among Recruitment Methods

The rate of depression was also compared among participants from each of the three recruitment methods utilized in this study; RDS, CPOL, and venue-based sampling. The most common response to the item, "you were bothered by things that usually don't bother you," was "some or little (1 – 2 days in the past week)" from RDS participants (50.5%), CPOL participants (42.3%), and venue-based participants (49.7%). The participant responses for this CES-D-12 item were not significantly different between RDS, CPOL, and venue-based MSM (X^2=9.1, p=.168). The most common response to the item, "you did not feel like eating, your appetite was poor," was "rarely or none (less than 1 day in the past week)" from RDS participants (49.1%), CPOL participants (58.2%), and venue-based participants (55.4%). The participant responses for this CES-D-12 item were not significantly different between RDS, CPOL, and venue-based MSM (X^2=11.5, p=.074). (Table 2.3)

RDS recruited participant most frequently responded “rarely or none (less than 1 day in the past week)” (42.8%), as did CPOL participants (52.1%), and venue-based participants (49.6%), to the CES-D item “you felt that you could not shake off the blues even with help from your family and friends.” The responses from the participants of the three recruitment methods were significantly different (X^2=29.7, p=.000). The most common response to the item, “you had trouble keeping your mind on what you were doing,” was “none of the time (less than 1 day in the past week)” from RDS participants (36.6%), CPOL participants (41.8%), and venue-based participants (43.4%) or “some or little (1 – 2 days in the past week)” from RDS participants (46.3%), CPOL participants (38.3%), and venue-based participants (38.3%). The participant responses for this CES-D-12 item were not significantly different between RDS, CPOL, and venue-based MSM (X^2=9.8, p=.136). (Table 2.3)

RDS participants felt depressed most frequently “some or little (1 – 2 days in the past week)” (46.4%), while CPOL participants felt depressed most frequently “some or little (1 – 2 days in the past week)” (43.3%), and venue-based also felt depressed most frequently “some or little (1 – 2 days in the past week)” (48.1%). The participant responses for, “you felt depressed” were not significantly different among the recruitment methods (X^2=10.4, p=.109). RDS participants felt that everything they did was an effort “rarely or none (less than 1 day in the past week)” (39.1%) or “some or little (1 – 2 days in the past week)” (42.5%). Similarly, CPOL participants most commonly responded “rarely or none (less than 1 day in the past week)” (50.7%) or “some or little (1 – 2 days in the past week)” (33.3%) to the CES-D item, “you felt that everything you did was an effort.” And venue-based participants also most frequently responded “rarely or none

(less than 1 day in the past week)" (50.4%) or "some or little (1 – 2 days in the past week)" (36.1%) to the item "you felt that everything you did was an effort." The CES-D item had significantly different responses across the recruitment methods (X^2=16.5, p=.011). (Table 2.3)

Study participants most frequently felt fearful "rarely or none (less than 1 day in the past week)" (RDS: 60.4%, CPOL: 56.1%, venue-based: 63.2%). The responses for this CES-D-12 item were significantly different between recruitment methods (X^2=16.9, p=.010).The response distribution for the item, "your sleep was restless" was wider, with the response "rarely or none (less than 1 day in the past week)" reported 27.8% from RDS participants, 30.8% from CPOL participants, and 39.6% from venue-based participants. The response "some or little (1 – 2 days in the past week)" reported 34.0% from RDS participants, 29.6% from CPOL participants, and 31.0% from venue-based participants. The response "occasionally (3 – 4 days in the past week)" reported 22.3% from RDS participants, 25.4% from CPOL participants, and 20.9% from venue-based participants. Lastly, the response "most or all of the time (5 – 7 days in the past week)" reported 15.9% from RDS participants, 14.2% from CPOL participants, and 8.6% from venue-based participants. The responses for the "your sleep was restless" differed significantly among the recruitment methods (X^2=25.4, p=.000). (Table 2.3)

RDS participants talked less than usual most frequently "rarely or none (less than 1 day in the past week)" (50.0%), while CPOL participants talked less than most frequently "rarely or none (less than 1 day in the past week)" (44.3%), and venue-based also talked less than usual most frequently "rarely or none (less than 1 day in the past week)" (54.2%). The participant responses for, "you talked less than usual" were not

significantly different among the recruitment methods (X^2=10.0, p=.125). RDS participants felt lonely most frequently responded either “rarely or none (less than 1 day in the past week)” (36.7%) or “some or little (1 – 2 days in the past week)” (34.0%). Similarly, CPOL participants felt lonely most frequently responded either “rarely or none (less than 1 day in the past week)” (32.3%) or “some or little (1 – 2 days in the past week)” (33.6%). Likewise, venue-based participants felt lonely most frequently responded either “rarely or none (less than 1 day in the past week)” (42.3%) or “some or little (1 – 2 days in the past week)” (31.7%). The responses for the CES-D-12 item, “you felt lonely” were significantly different between the recruitment methods (X^2=19.1, p=.004). (Table 2.3)

In response to the CES-D item “you felt sad,” RDS participants most frequently responded “rarely or none (less than 1 day in the past week)” (35.5%) or “some or little (1 – 2 days in the past week)” (38.0%). CPOL participants most frequently responded “rarely or none (less than 1 day in the past week)” (33.3%) or “some or little (1 – 2 days in the past week)” (39.3%). Similarly, venue-based participants most frequently responded “rarely or none (less than 1 day in the past week)” (40.8%) or “some or little (1 – 2 days in the past week)” (37.9%). The responses for the CES-D-12 item, “you felt sad” were not significantly different between the recruitment methods (X^2=10.6, p=.103). Lastly, in response to the CES-D012 item “you could not get going,” participants were most likely to respond “rarely or none (less than 1 day in the past week)” (RDS: 57.7%, CPOL: 56.2%, venue-based: 65.8%). The distribution of responses for this CES-D-12 item was significantly different between the recruitment methods (X^2=16.7, p=.010). (Table 2.3)

The CES-D-12 item summary score was significantly different between the RDS, CPOL, and venue-based recruitment methods (F=5.1, p=.006). The CES-D-12 item summary score for RDS participants was 20.9±6.5, for CPOL participants were 20.6±6.7 and the summary score for venue-based participants was 19.7±6.2. (Table 2.3)

Description of Depressive Symptoms among Money Boys and MSM

For the overall sample, 66.0% of the participants displayed minimally depressive symptoms, 22.0% displayed somewhat elevated depressive symptoms, and 7.0% displayed very elevated depressive symptoms (Table 3.1). Of the money boys, 58.8% had minimally depressive symptoms, 42.8% had somewhat elevated depressive symptoms, and 15.6% had very elevated depressive symptoms. Of the general MSM, 72.2% had minimally depressive symptoms, 17.2% had somewhat elevated depressive symptoms, and 15.6% had very elevated depressive symptoms. A two-sample t-test revealed that there was a significant difference between money boys and general MSM with minimally depressive symptoms (t=4.59, p=.000), while there was no significant difference between the money boys and general MSM with somewhat elevated depressive symptoms (t=.069, p=.945) or very elevated depressive symptoms (t=1.03, p=.307). (Table 3.2)

Description of Depressive Symptoms among Recruitment Methods

The majority of RDS recruited participants had minimal depressive symptoms (64.1%), while 24.8% of RDS participants had somewhat elevated depressive symptoms, and 7.9% of RDS participants had very elevated depressive symptoms. Similarly, the majority of CPOL recruited participants had minimal depressive symptoms (61.9%), while 22.9% of CPOL participants had somewhat elevated depressive symptoms, and 7.7% of CPOL participants had very elevated depressive symptoms. Of the venue-based

sample, 70.3% of participants had minimal depressive symptoms, 19.2% had somewhat elevated symptoms, and 5.9% had very elevated depressive symptoms. Depressive symptoms were significantly different across the three recruitment methods, with minimal depressive symptoms being significantly different across the recruitment methods (F=4.31, p=.014), and very elevated depressive symptoms being significantly different (F=3.64, p=.030). The distribution of somewhat elevated depressive symptoms was not significantly different across the recruitment methods (F=.85, p=.429). (Table 3.3)

Description of the Rate of Intimate Partner Violence in the Sample

Male-on-male IPV was determined with a seven-item survey in which the participants were asked to denote the number of partners in which they had experienced that particular act of violence. Among the overall sample (N=1,352), 8.1% of the men had experienced a threat of ceasing help with money or housing from a partner (n=109), 10.8% had experienced damage or destruction of property due to a partner (n=145), 10.6% had experienced a threat from a male partner in the form of revealing their sexuality (n=143), 24.1% had been verbally threatened of physical or emotional harm (n=324), 13.3% had been hit or had something thrown at them (n=179), 7.4% had been forced to have sex when they did not want to (n=99), and 23.8% of the sample had a male partner verbally threaten them to physical harm someone for which they cared (n=321).

The forms of violence were summed for each participant, and it was determined that 32.9% of the sample has experienced one or two forms of violence from a male partner over the course of their lifetime (n=443). In addition, 13.8% of the men in this

sample had experienced more than two forms of violence from a male partner (n=186). A factorial ANOVA comparing the frequency IPV variable experienced by the sample subsets (i.e. RDS money boys, RDS general MSM, CPOL money boys, CPOL general MSM, venue-based money boys, and venue-based general MSM) found the following IPV variables to be statistically significant; "they threatened to stop helping you with money or housing" ($p<.05$), "verbally threatened to harm you physically or emotionally" ($p<.05$), "they hit or threw something at you" ($p<.05$), and "forced you to have sex when you didn't want to" ($p<.01$). Additionally, the number of men that have experienced one or two forms of abuse from a male partner also differed significantly among the sample subsets ($p<.001$), as did the sample subset frequency of the men experiencing two or more forms of IPV ($p<.001$). (Table 4.1)

Rate of IPV among Money Boys and General MSM

In this study, the rate of IPV was compared between money boys and general MSM. Among money boys, 10.8% had been threatened to stop being helped with money or housing by a male partner, which was significantly different than general MSM at a rate of 5.7% ($X^2=16.2$, $p=.024$). Among general MSM, 8.8% had a male partner damage or destroy their property, which was not significantly lower than the rate among money boys (13.1%, $X^2=12.1$, $p=.096$). Likewise, the number of money boys (10.8%) experiencing a threat from their partner in regards to telling others about their sexuality was not significantly different than general MSM (10.4%, ($X^2=1.0$, $p=.960$). Verbal threats of physical or emotional harm did not differ significantly between money boys (26.1%) or general MSM (22.3%) ($X^2=10.5$, $p=.232$). However, being hit or having something thrown at a participant did significantly differ between money boys (16.1%)

and general MSM (10.8%) (X^2=16.4 p=.012). Likewise, being forced to have sex when a participant did not want to differed between money boys (9.9%) and general MSM (5.1%) (X^2=19.0 p=.002). Being verbally threated to physically harm someone a participant cared for was not statistically different between money boys (26.9%) and general MSM (21.2%) (X^2=14.0 p=.123). Lastly, 63.5% of money boys had experienced one or two forms of abuse compared to 29.7% of general MSM (X^2=6.7 p=.000), and 16.9% of money boys experienced more than two forms of abuse from a male partner in comparison to 11.1% of general MSM (X^2=9.2 p=.000). (Table 4.2)

Rate of IPV among Recruitment Methods

The rate of male-on-male IPV was also compared between the three recruitment methods utilized by this study; RDS, CPOL, and venue-based. The frequency of participants being threatened by a male partner to stop help with money or housing did not vary significantly between the recruitment methods (RDS: 10.9%, CPOL: 7.0%, venue-based: 7.0%, X^2=19.9, p=.135), nor did the frequency of a participant having a piece of property damaged or destroyed (RDS: 13.7%, CPOL: 5.8%, venue-based: 12.5%, X^2=22.8, p=.064). A participant being threatened to tell others about their sexuality also did not differ between recruitment methods (RDS: 9.2%, CPOL: 8.0%, venue-based: 13.9%, X^2=14.0, p=.173). Experiencing verbal threats of physical or emotional abuse did not vary between recruitment methods (RDS: 25.9%, CPOL: 19.3%, venue-based: 26.6%, X^2=20.4, p=.201), nor did a participant's experience of being hit or having something thrown at them (RDS: 14.7%, CPOL: 12.5%, venue-based: 13.0%, X^2=12.3, p=.419). However, the IPV variable of forced sex was significantly different between recruitment methods (RDS: 5.7%, CPOL: 12.8%, venue-based: 4.8%, X^2=30.6,

p=.001), as was verbal threats to physically harm someone a participant cared for (RDS: 25.1%, CPOL: 19.5%, venue-based: 26.4%, X^2=28.8, p=.051).

Of RDS recruited participants, 36.1% experienced one or two forms of abuse, while 27.4% of CPOL participants and 34.2% of venue-based participants experienced one or two forms of abuse from a male partner (X^2=8.0, p=.019). In addition, 14.4% of RDS participants experienced more than two forms of abuse from a male partner, in comparison to 11.2% of CPOL participants, and 15.2% of venue-based participants (X^2=3.3, p=.191). (Table 4.3)

Description of Gender Role Beliefs among the Sample

Participants of this study were asked to answer nine survey items that measured the beliefs they held about gender roles. The first gender role belief item answered by the participants was, "a husband should have the right to discipline his wife." The frequency of responses for the overall sample was distributed in the following way; 28.6% of the participants said "false," 17.1% said "somewhat false," 26.0% said "somewhat true," 24.3% said true, and 4.1% of the participants did not know. The second gender role belief item answered by the participants was, "a man is the ruler of the home." The frequency of responses for the overall sample was distributed in the following way; 33.0% of the participants said "false," 16.9% said "somewhat false," 18.5% said "somewhat true," 28.5% said true, and 3.2% of the participants did not know. The third gender role belief item answered by the participants was, "a man is entitled to have sex with his wide whenever he wants." The frequency of responses for the overall sample was distributed in

the following way; 64.1% of the participants said “false,” 19.5% said “somewhat false,” 7.8% said “somewhat true,” 6.0% said true, and 2.7% of the participants did not know.

The fifth gender role belief item answered by the participants was, “some women seem to ask for beating from their husbands.” The frequency of responses for the overall sample was distributed in the following way; 25.1% of the participants said “false,” 16.4% said “somewhat false,” 23.3% said “somewhat true,” 11.4% said true, and 23.6% of the participants did not know. The sixth gender role belief item answered by the participants was, “the husband has the right to hit his wife when the wife refused to cook and keep the house clean.” The frequency of responses for the overall sample was distributed in the following way; 78.2% of the participants said “false,” 14.9% said “somewhat false,” 3.2% said “somewhat true,” 1.9% said true, and 1.8% of the participants did not know. The seventh gender role belief item answered by the participants was, “the husband has the right to hit his wife when the wife refused to have sex with the husband.” The frequency of responses for the overall sample was distributed in the following way; 80.7% of the participants said “false,” 13.8% said “somewhat false,” 1.8% said “somewhat true,” 1.4% said true, and 2.3% of the participants did not know.

The eighth gender role belief item answered by the participants was, “the husband has the right to hit his wife when told friends that the husband was sexually pathetic.” The frequency of responses for the overall sample was distributed in the following way; 55.0% of the participants said “false,” 22.6% said “somewhat false,” 11.1% said “somewhat true,” 7.0% said true, and 4.4% of the participants did not know. Lastly, the ninth gender role belief item answered by the participants was, “the husband has the right

to hit his wife when the wife nags the husband too much." The frequency of responses for the overall sample was distributed in the following way; 76.9% of the participants said "false," 16.3% said "somewhat false," 3.3% said "somewhat true," 1.5% said true, and 2.1% of the participants did not know. The overall gender role belief summary score is the sum of mean response to the individual gender role belief items in the survey, and was 17.8±5.5. (Table 5.1)

Gender Role Beliefs among Money Boys and General MSM

A comparison between the gender role beliefs of money boys and general MSM was conducted. For the gender role item, "A husband has the right to discipline his wife," money boys responded; 26.3% said false, 16.2% said somewhat false, 26.9% said somewhat true, 26.8% said true, and 3.8% did not know. In comparison, general MSM responded to the same gender role item with the following frequency; 30.7% said false, 17.9% said somewhat false, 25.1% said somewhat true, 22.1% said true, and 4.3% did not know. The frequency of responses for "a husband should have the right to discipline his wife" was not significantly different between money boys and general MSM (X^2=6.6, p=.162). For the gender role item, "A man is the ruler in the home," money boys responded; 28.5% said false, 18.1% said somewhat false, 19.3% said somewhat true, 30.0% said true, and 4.1% did not know. In comparison, general MSM responded to the same gender role item with the following frequency; 36.9% said false, 15.8% said somewhat false, 17.8% said somewhat true, 27.2% said true, and 2.4% did not know. The frequency of responses for "a husband should have the right to discipline his wife" was significantly different between money boys and general MSM (X^2=12.8, p=.012).

The third gender role item, "A man is entitled to have sex with his wife whenever he wants," was responded by money boys with the following frequency; 61.5% said false, 21.6% said somewhat false, 8.6% said somewhat true, 6.0% said true, and 2.4% did not know. In comparison, general MSM responded to the same gender role item with the following frequency; 66.3% said false, 17.8% said somewhat false, 7.1% said somewhat true, 6.0% said true, and 2.9% did not know. The frequency of responses for "A man is entitled to have sex with his wife whenever he wants" was not significantly different between money boys and general MSM (X^2=5.0, p=.285). The forth gender role item, "some women seem to ask for beatings from their husbands," was responded by money boys with the following frequency; 26.2% said false, 16.5% said somewhat false, 20.3% said somewhat true, 12.1% said true, and 24.8% did not know. In comparison, general MSM responded to the same gender role item with the following frequency; 24.1% said false, 16.4% said somewhat false, 25.9% said somewhat true, 10.8% said true, and 22.6% did not know. The frequency of responses for "some women seem to ask for beatings from their husbands" was not significantly different between money boys and general MSM (X^2=7.1, p=.212). The fifth gender role item, "the husband has the right to hit his wife when the wife had sex with another man," was responded by money boys with the following frequency; 33.8% said false, 19.5% said somewhat false, 19.0% said somewhat true, 24.8% said true, and 2.9% did not know. In comparison, general MSM responded to the same gender role item with the following frequency; 43.7% said false, 17.9% said somewhat false, 16.8% said somewhat true, 18.1% said true, and 3.5% did not know. The frequency of responses for "the husband has the right to hit his wife when the wife had

sex with another man" was significantly different between money boys and general MSM (X^2=17.2, p=.002).

The sixth gender role item, "the husband has the right to hit his wife when the wife refused to cook and keep the house clean," was responded by money boys with the following frequency; 77.9% said false, 15.7% said somewhat false, 3.7% said somewhat true, 1.0% said true, and 1.8% did not know. In comparison, general MSM responded to the same gender role item with the following frequency; 78.4% said false, 14.2% said somewhat false, 2.8% said somewhat true, 2.8% said true, and 1.8% did not know. The frequency of responses for "the husband has the right to hit his wife when the wife refused to cook and keep the house clean" was not significantly different between money boys and general MSM (X^2=7.2, p=.127). The seventh gender role item, "the husband has the right to hit his wife when the wife refused to have sex with the husband," was responded by money boys with the following frequency; 82.5% said false, 12.9% said somewhat false, 1.3% said somewhat true, 1.0% said true, and 2.4% did not know. In comparison, general MSM responded to the same gender role item with the following frequency; 79.1% said false, 14.7% said somewhat false, 2.2% said somewhat true, 1.8% said true, and 2.2% did not know. The frequency of responses for "the husband has the right to hit his wife when the wife refused to have sex with the husband" was not significantly different between money boys and general MSM (X^2=4.8, p=.308).

The eighth gender role item, "the husband has the right to hit his wife when the wife told friends that the husband was sexually pathetic," was responded by money boys with the following frequency; 53.1% said false, 23.0% said somewhat false, 12.4% said somewhat true, 6.2% said true, and 5.4% did not know. In comparison, general MSM

responded to the same gender role item with the following frequency; 56.6% said false, 22.2% said somewhat false, 10.0% said somewhat true, 7.6% said true, and 3.6% did not know. The frequency of responses for "the husband has the right to hit his wife when the wife told friends that the husband was sexually pathetic" was not significantly different between money boys and general MSM (X^2=6.0, p=.201). The final gender role item, "the husband has the right to hit his wife when the wife nags the husband too much," was responded by money boys with the following frequency; 77.2% said false, 16.3% said somewhat false, 2.4% said somewhat true, 1.4% said true, and 2.7% did not know. In comparison, general MSM responded to the same gender role item with the following frequency; 76.7% said false, 16.3% said somewhat false, 4.0% said somewhat true, 1.5% said true, and 1.5% did not know. The frequency of responses for "the husband has the right to hit his wife when the wife told friends that the husband was sexually pathetic" was not significantly different between money boys and general MSM (X^2=5.1, p=.282). The overall gender role belief sum score for money boys was 18.1±5.3, in comparison to general MSM of 17.5±5.6, which was significantly different (F=4.8, p=.029). (Table 5.1)

Gender Role Beliefs among Participants, Stratified by Recruitment Method

In addition to comparing the frequency of responses from money boys and general MSM to gender role belief items, frequency of responses were compared among the three recruitment methods; RDS, CPOL, and venue-based. In response to, "a husband should have the right to discipline his wife," RDS participants responded; 23.3% said false, 16.8% said somewhat false, 23.5% said somewhat true, 31.7% said true, and 4.7% did not know. CPOL participants responded to this gender role belief item with the following frequencies; 28.9% said false, 19.7% said somewhat false, 28.9% said

somewhat true, 20.4% said true, and 2.2% did not know. Venue-based participants responded to this gender role belief item with the following frequencies; 32.4% said false, 15.4% said somewhat false, 25.6% said somewhat true, 21.6% said true, and 4.9% did not know. The frequency of responses for "a husband should have the right to discipline his wife" was significantly different between the recruitment methods (X^2=29.5, p=.000). In response to, "A man is the ruler in the home," RDS participants responded; 28.0% said false, 17.8% said somewhat false, 14.4% said somewhat true, 36.4% said true, and 3.5% did not know. CPOL participants responded to this gender role belief item with the following frequencies; 30.8% said false, 13.9% said somewhat false, 26.4% said somewhat true, 26.1% said true, and 2.7% did not know. Venue-based participants responded to this gender role belief item with the following frequencies; 38.3% said false, 18.3% said somewhat false, 15.8% said somewhat true, 24.4% said true, and 3.3% did not know. The frequency of responses for "A man is the ruler in the home" was significantly different between the recruitment methods (X^2=44.0, p=.000).

For the third gender role belief item, "a man is entitled to have sex with his wife whenever he wants," RDS participants responded; 55.7% said false, 22.8% said somewhat false, 10.9% said somewhat true, 6.9% said true, and 3.7% did not know. CPOL participants responded to this gender role belief item with the following frequencies; 69.4% said false, 16.4% said somewhat false, 5.7% said somewhat true, 5.5% said true, and 3.0% did not know. Venue-based participants responded to this gender role belief item with the following frequencies; 66.3% said false, 19.4% said somewhat false, 7.0% said somewhat true, 5.7% said true, and 1.6% did not know. The frequency of responses for "a man is entitled to have sex with his wife whenever he

wants" was significantly different between the recruitment methods (X^2=23.3, p=.003). For the fourth gender role belief item, "some women seem to ask for beatings from their husbands," RDS participants responded; 24.6% said false, 16.9% said somewhat false, 20.1% said somewhat true, 12.2% said true, and 26.1% did not know. CPOL participants responded to this gender role belief item with the following frequencies; 24.1% said false, 15.2% said somewhat false, 26.1% said somewhat true, 9.5% said true, and 25.1% did not know. Venue-based participants responded to this gender role belief item with the following frequencies; 26.2% said false, 17.0% said somewhat false, 23.6% said somewhat true, 12.3% said true, and 20.7% did not know. The frequency of responses for "some women seem to ask for beatings from their husbands" was not significantly different between the recruitment methods (X^2=10.9, p=.363).

For the fifth gender role belief item, "the husband has the right to hit his wife when the wife had sex with another man," RDS participants responded; 37.6% said false, 18.3% said somewhat false, 16.4% said somewhat true, 23.9% said true, and 4.0% did not know. CPOL participants responded to this gender role belief item with the following frequencies; 41.1% said false, 17.2% said somewhat false, 22.7% said somewhat true, 17.5% said true, and 1.5% did not know. Venue-based participants responded to this gender role belief item with the following frequencies; 38.6% said false, 20.1% said somewhat false, 15.4% said somewhat true, 22.0% said true, and 3.8% did not know. The frequency of responses for "the husband has the right to hit his wife when the wife had sex with another man" was significantly different between the recruitment methods (X^2=18.7, p=.016). For the sixth gender role belief item, "the husband has the right to hit his wife when the wife refused to cook and keep the house clean," RDS participants

responded; 71.8% said false, 18.0% said somewhat false, 3.3% said somewhat true, 3.3% said true, and 3.8% did not know. CPOL participants responded to this gender role belief item with the following frequencies; 83.3% said false, 12.4% said somewhat false, 2.5% said somewhat true, 1.0% said true, and 0.7% did not know. Venue-based participants responded to this gender role belief item with the following frequencies; 79.1% said false, 14.5% said somewhat false, 3.7% said somewhat true, 1.7% said true, and 1.1% did not know. The frequency of responses for "the husband has the right to hit his wife when the wife refused to cook and keep the house clean" was significantly different between the recruitment methods (X^2=27.0, p=.001).

For the seventh gender role belief item, "the husband has the right to hit his wife when the wife refused to have sex with the husband," RDS participants responded; 74.2% said false, 16.1% said somewhat false, 2.7% said somewhat true, 3.0% said true, and 4.0% did not know. CPOL participants responded to this gender role belief item with the following frequencies; 85.8% said false, 10.9% said somewhat false, 2.2% said somewhat true, no participants said true, and 1.0% did not know. Venue-based participants responded to this gender role belief item with the following frequencies; 81.7% said false, 14.3% said somewhat false, 0.7% said somewhat true, 1.3% said true, and 2.0% did not know. The frequency of responses for "the husband has the right to hit his wife when the wife refused to have sex with the husband" was significantly different between the recruitment methods (X^2=34.3, p=.000). For the eighth gender role belief item, "the husband has the right to hit his wife when the wife told friends that the husband was sexually pathetic," RDS participants responded; 50.2% said false, 24.3% said somewhat false, 11.4% said somewhat true, 8.2% said true, and 5.9% did not know. CPOL

participants responded to this gender role belief item with the following frequencies; 56.2% said false, 22.4% said somewhat false, 13.9% said somewhat true, 5.5% said true, and 2.0% did not know. Venue-based participants responded to this gender role belief item with the following frequencies; 57.5% said false, 21.4% said somewhat false, 8.8% said somewhat true, 7.1% said true, and 5.1% did not know. The frequency of responses for "the husband has the right to hit his wife when the wife told friends that the husband was sexually pathetic" was significantly different between the recruitment methods (X^2=19.0, p=.015).

Finally, the ninth gender role belief item, "the husband has the right to hit his wife when the wife nags the husband too much," RDS participants responded; 72.5% said false, 18.1% said somewhat false, 3.5% said somewhat true, 3.0% said true, and 3.0% did not know. CPOL participants responded to this gender role belief item with the following frequencies; 82.3% said false, 12.4% said somewhat false, 3.2% said somewhat true, 0.5% said true, and 1.5% did not know. Venue-based participants responded to this gender role belief item with the following frequencies; 76.1% said false, 17.8% said somewhat false, 3.1% said somewhat true, 1.1% said true, and 1.8% did not know. The frequency of responses for "the husband has the right to hit his wife when the wife nags the husband too much" was significantly different between the recruitment methods (X^2=19.5, p=.013). The overall gender role belief sum score for RDS recruited participants was 17.2±5.0, in comparison to CPOL participants scoring an average of 17.4±5.3 and venue-based participants with an average sum score of 17.8±5.5, which was significantly different (F=13.7, p=.000). (Table 5.1)

Description of Sexual Concurrency among the Sample

Sexual Concurrency among Money Boys and General MSM

The number of sexual partners a participant had with men in the last 30 days, with women in the last 30 days, with men over the course of their lifetime, and with women over the course of their lifetime was compared between money boys and general MSM. The number of money boys who had no male sexual partners over the last 30 days was 22, as compared to 115 general MSM having no male sexual partners. Of the money boys, 24.2% had one to three male sexual partners over the last 30 days, and 71.8% of general MSM had one to three male sexual partners over the last 30 days. Of the participants having four to six partners over the last 30 days there were 105 money boys and 61 general MSM. Of the participants, 11.7% money boys and 1.7% general MSM had seven to nine male sexual partners over the last 30 days. Lastly, there were 277 money boys and 15 general MSM that had over 10 male sexual partners over the last 30 days. A layered Chi-square analysis revealed that there was a significant difference between money boys and general MSM in the average number of male sexual partners a participant had over the last 30 days (X^2=160.8, p=.000).

The number of sexual partners a participant had with women in the last 30 days was compared between money boys and general MSM. The number of money boys who had no female sexual partners over the last 30 days was 528, as compared to 582 general MSM having no female sexual partners over the last 30 days. Of the participants, 91 money boys and 127 general MSM had one to three female sexual partners over the last 30 days. Of the participants having four to six female partners over the last 30 days there were seven money boys and two general MSM. Of the sample participants, one money

boy and no general MSM had seven to nine female sexual partners over the last 30 days. Lastly, there were no money boys and only one general MSM that had over 10 female sexual partners in the last 30 days. A layered Chi-square analysis revealed that there was not a significant difference between money boys and general MSM in the number of female sexual partners a participant had over the last 30 days (X^2=1.43, p=.231).

Participants were asked to denote the number of male sexual partners they have had over the course of their lifetime. Of those who responded that they had no male sexual partners over the course of their lifetime, there were three money boys and three general MSM. Of the participants, 12 money boys and 81 general MSM had one to three male sexual partners over their lifetime. Of the participants having four to six male partners over their lifetime there were 11 money boys and 126 general MSM. Of the sample participants, ten money boys and 82 general MSM had seven to nine male sexual partners over their lifetime. Lastly, there were 593 money boys and 426 general MSM that had over 10 male sexual partners over the course of their lifetime. A layered Chi-square analysis revealed that there was not a significant difference between money boys and general MSM in the number of male sexual partners a participant had over their lifetime (X^2=0.03, p=.871).

The number of sexual partners a participant had with women over a lifetime was compared between money boys and general MSM. The number of money boys who had no female sexual partners over their lifetime was 213, as compared to 277 general MSM having no female sexual partners over their life. Of the participants, 251 money boys and 326 general MSM had one to three female sexual partners over their lifetime. Of the participants having four to six female partners over a lifetime there were 69 money boys

and 53 general MSM. Of the sample participants, 21 money boys and 17 general MSM had seven to nine female sexual partners over their lifetime. Lastly, there were 72 money boys and 40 general MSM that had over 10 female sexual partners over the course of their lifetime. A layered Chi-square analysis revealed that there was not a significant difference between money boys and general MSM in the number of female sexual partners a participant had over their lifetime (X^2=3.34, p=.067).

The presence of overlapping male and female sexual relationships over the last 30 days and lifetime was also analyzed for money boys and general MSM. Of those reporting no male or female sexual partners over the last 30 days, 17 were money boys and 98 were general MSM. There were 516 money boys, in comparison to 494 general MSM, that reported only having male sexual partners over the last 30 days. Of the men reporting only having female sexual partners in the last 30 days, five were money boys and 17 were general MSM. Lastly, there were 93 money boys and 112 general MSM that reported having both male and female sexual partners in the last 30 days. A layered Chi-square analysis revealed that there was not a significant difference between money boys and general MSM in the pattern of male and female sexual partners over the last 30 days (X^2=.166, p=.684).

The last variable analyzed for sexual concurrency among money boys and general MSM sampled for this study was the presence of overlapping male and female sexual relationships over their lifetime. Of those reporting no male or female sexual partners over their lifetime, one was a money boy and four were general MSM. There were 212 money boys, in comparison to 274 general MSM, that reported only having male sexual partners over the course of their lifetime. Of the men reporting only having female sexual

partners in their lifetime, three were money boys and one was a general MSM. Lastly, there were 414 money boys and 437 general MSM that reported having both male and female sexual partners in their lifetime. A layered Chi-square analysis revealed that there was not a significant difference between money boys and general MSM in the pattern of male and female sexual partners over their lifetime (X^2=3.16, p=.076). (Table 6.1)

Sexual Concurrency among Participant, Stratified by Recruitment Method

The number of sexual partners a participant had with men in the last 30 days, with women in the last 30 days, with men over the course of their lifetime, and with women over the course of their lifetime was compared between the recruitment methods utilized in this study; RDS, CPOL, and venue-based recruitment. Of those participants who had not had any male sexual partners in the last 30 days, 40 of the participants were recruited by RDS, 45 by CPOL, and 52 by the venue-based recruitment method. Of the participants who had one to three male sexual partners in the last 30 days, 199 were recruited by RDS, 169 from CPOL, and 303 were recruited from venue-based sampling. Of the participants who had four to six male sexual partners in the last 30 days, 55 were recruited by RDS, 41 from CPOL, and70 were recruited from venue-based sampling. Of the participants who had seven to nine male sexual partners in the last 30 days, 20 were recruited by RDS, 28 from CPOL, and 38 were recruited from venue-based sampling. Lastly, 90 RDS participants, 122 CPOL participants, and 83 venue-based participants had ten or more male sexual partner in the last 30 days. A layered Chi-square analysis revealed that there was a statistically significant difference between participants recruited from the three recruitment methods in regards to the number of male sexual partners a participant had over the last 30 days (X^2=70.7, p=.000).

Of those participants who had not had any female sexual partners in the last 30 days, 313 of the participants were recruited by RDS, 360 by CPOL, and 437 were recruited by the venue-based method. Of the participants who had one to three female sexual partners in the last 30 days, 81 were recruited by RDS, 37 from CPOL, and 100 were recruited from venue-based sampling. Of the participants who had four to six female sexual partners in the last 30 days, two were recruited by RDS, four from CPOL, and three participants were recruited from venue-based sampling. Of the participants who had seven to nine female sexual partners in the last 30 days, one was recruited by RDS, no participants from CPOL, and no participants were recruited from venue-based sampling. Lastly, one RDS participant, no CPOL participants, and no venue-based participants had ten or more female sexual partner in the last 30 days. A layered Chi-square analysis revealed that there was a statistically significant difference between participants recruited from the three recruitment methods in regards to the number of female sexual partners a participant had over the last 30 days (X^2=19.9, p=.000).

In regards to the number of male sexual partners a participant has had over the course of their lifetime, only three RDS participants, three CPOL participants, and no venue-based participants reported having no male sexual partners. Of the participants who had one to three male sexual partners in their lifetime, 34 were recruited by RDS, 20 from CPOL, and 39 were recruited from venue-based sampling. Of the participants who had four to six male sexual partners over their lifetime, 34 were recruited by RDS, 38 from CPOL, and 65 participants were recruited from venue-based sampling. Of the participants who had seven to nine male sexual partners in their lifetime, ten were recruited by RDS, 44 participants from CPOL, and 38 participants were recruited from

venue-based sampling. Lastly, 323 RDS participants, 297 CPOL participants, and 404 venue-based participants had ten or more male sexual partners in their lifetime. A layered Chi-square analysis revealed that there was no statistically significant difference between participants recruited from the three recruitment methods in regards to the number of male sexual partners a participant had in their lifetime (X^2=4.1, p=.131).

Lastly, for the number of female sexual partners a participant has had over the course of their lifetime, 109 RDS participants, 181 CPOL participants, and 200 venue-based participants reported having no female sexual partners. Of the participants who had one to three female sexual partners in their lifetime, 205 were recruited by RDS, 156 from CPOL, and 216 were recruited from venue-based sampling. Of the participants who had four to six female sexual partners over their lifetime, 44 were recruited by RDS, 31 from CPOL, and 46 participants were recruited from venue-based sampling. Of the participants who had seven to nine female sexual partners in their lifetime, eight were recruited by RDS, nine participants from CPOL, and 21 participants were recruited from venue-based sampling. Lastly, 38 RDS participants, 25 CPOL participants, and 63 venue-based participants had ten or more female sexual partners in their lifetime. A layered Chi-square analysis revealed that there was is a statistically significant difference between participants recruited from the three recruitment methods in regards to the number of female sexual partners a participant had in their lifetime (X^2=27.2, p=.000).

The presence of overlapping male and female sexual relationships over the last 30 days and lifetime was also analyzed to compare the participants of different recruitment methods. Of those reporting no male or female sexual partners over the last 30 days, 32 were RDS participants, 42 recruited by CPOL, and 41 recruited from the venue-based

sampling method. There were 289 RDS participants, in comparison to 319 CPOL participants and 402 venue-based participants that reported only having male sexual partners over the last 30 days. Of the men reporting only having female sexual partners in the last 30 days, eight were recruited by RDS, three were recruited by CPOL, and 11 were venue-based participants. Lastly, there were 75 RDS participants, 38 CPOL participants, and 92 venue-based participants that reported having both male and female sexual partners in the last 30 days. A layered Chi-square analysis revealed that there was a statistically significant difference between the recruitment methods in the pattern of male and female sexual partners over the last 30 days (X^2=15.0, p=.001).

The final variable analyzed for sexual concurrency among the participants sampled from the three recruitment methods was the presence of overlapping male and female sexual relationships over their lifetime. Of those reporting no male or female sexual partners over their lifetime, none were recruited by RDS, four were recruited by CPOL, and one was recruited from venue-based sampling. There were 110 RDS participants, 177 CPOL participants, in comparison to 199 venue-based participants that reported only having male sexual partners over the course of their lifetime. Of the men reporting only having female sexual partners in their lifetime, three were RDS participants, one was a CPOL recruited participant, and no venue-based participants had only female relationships over the course of their life. Lastly, there were 291 RDS participants, 219 CPOL participants, and 341 venue-based participants that reported having both male and female sexual partners in their lifetime. A layered Chi-square analysis revealed that there was a statistically significant difference between the

recruitment methods in the pattern of male and female sexual partners over their lifetime (X^2=26.3, p=.000). (Table 6.2)

Description of Drug Use among the Sample

All participants were asked to report the use of drugs, ice or methamphetamines, Ecstasy, or any other drugs other than stimulants, Heroin, Ecstasy or ice. In addition, participants were asked to report the quantity of drugs used per day over the last three months. Of all of the participants, 20.7% had ever used drugs, 8.0% had used ice or methamphetamines, 19.3% had used stimulants, 3.7% had used Ecstasy, and 3.7% had used drugs other than those previously listed. A layered Chi-square analysis revealed that there was a statistically significant difference between the each of the sample subsets present in this study for drug use ever (X^2=10.9, p=.004), use of ice or methamphetamines (X^2=9.60, p=.008), use of stimulants (X^2=104.7, p=.000), use of Ecstasy (X^2=30.4, p=.000), and use of other drugs than those previously listed (X^2=19.6, p=.000). For the overall sample, the average quantity of drugs used was 1.8±8.9 per day in the last three months, which was significantly different among the sample subsets (F=5.7, p=.004). (Table 7.1)

Drug Use among Money Boys and General MSM

The use of drugs ever in a participant's lifetime, the type of drugs a participant has used, and the quantity of drugs used per day over the last three months was compared between money boys and MSM sampled in this study. Among money boys, 29.0% had ever used drugs, which was significantly different in comparison to 13.8% of general MSM that have ever used drugs (X^2=37.7, p=.000). Similarly, 12.8% of money boys had

used ice or methamphetamines, which were significantly different in comparison to 3.9% of general MSM (X^2=35.4, p=.000). Among money boys, 26.4% had ever used stimulants, which was significantly different in comparison to 13.1% of general MSM that have ever used stimulants (X^2=37.4, p=.000). Of the money boys sampled in this study, 4.8% had ever used Ecstasy and 2.8% of general MSM had ever used Ecstasy (X^2=3.7, p=.054). Lastly, 5.1% of money boys and 2.5% general MSM had ever used drugs others than stimulants, Heroin, Ecstasy or ice (X^2=6.3, p=.012).

Among money boys, the average quantity of drugs used was 2.8±11.5 per day in the last three months. In comparison, the average quantity of drugs used among general MSM was 0.6±3.8 per day in the last three months, which was significantly different than the quantity of drugs used among the money boys (F=23.2, p=.000). (Table 7.2)

Drug Use among Recruitment Methods

The use of drugs ever in a participant's lifetime, the type of drugs a participant has used, and the quantity of drugs used per day over the last three months was compared between the recruitment methods in this study. Among the participants, 17.1% of RDS recruited men, 16.7% of CPOL recruited men, and 24.2% of venue-based recruited men had ever used drugs (X^2=10.9, p=.004). Of the participants, 9.4% of RDS recruited men, 4.5% of the CPOL recruited men, and 9.5% venue-based recruited men had ever used ice or methamphetamines (X^2=9.6, p=.008). Among the RDS participants, 6.9% had ever used stimulants, which was significantly different in comparison to 13.9% of the CPOL participants and 32.1% of venue-based participants that have ever used stimulants (X^2=104.7, p=.000). Of the RDS participants sampled in this study, 7.9% had ever used Ecstasy, 1.0% CPOL participants, and 2.6% of venue-based participants had ever used

Ecstasy (X^2=30.4, p=.000). Lastly, 7.2% of RDS participants, 2.2% of CPOL participants, and 2.2% of venue-based participants had ever used drugs others than stimulants, Heroin, Ecstasy or ice (X^2=19.6, p=.000).

Among RDS recruited participants, the average quantity of drugs used was 0.05±0.48 per day in the last three months. In comparison, the average quantity of drugs used among CPOL participants was 8.2±17.2 per day in the last three months. Finally, the average quantity of drugs used among venue-based participants was 1.8±8.9 per day in the last three months. The quantity of daily drug use over the last three months was significantly different between the participants of the three recruitment methods (F=34.8, p=.000). (Table 7.3)

Demographic Correlations with Depression

The CES-D-12 item summary score was correlated to the following demographic characteristics; participant age, age at first sexual contact with men, age at first sexual contact with women, ethnicity, hukou, level of education, income, sexual orientation, marital status, participant type, and recruitment method. The following demographic characteristics were negatively and weakly correlated to the CES-D-12 item summary score; age (r=-0.22, p<.001), age at first sexual contact with men (r=-0.13, p<.001), age at first sexual contact with women (r=-0.15, p<.001), level of education (r=-0.13, p<.001), and participant type (r=-0.21, p<.001). A participant's hukou was positively and weakly correlated with the CES-D-12 item summary score (r=0.19, p<.001). Both ethnicity (r=0.07, p<.01) and sexual orientation (r=0.08, p<.01) were positively and very weakly correlated to the CES-D-12 item summary score. Lastly, the CES-D-12 item summary

score was very weakly and negatively correlated to income (r=-0.05, p>.05) and recruitment method (r=-0.08, p<.01).

Participant type was examined to verify if it is a mediating variable between the association of depression and the psychosocial variables of male-on-male IPV, sexual concurrency, gender role beliefs, and drug use. Therefore, participant type was correlated to all of the demographic characteristics in this study. The following demographic characteristics were positively and moderately correlated to participant type; age (r=0.36, p<.001), age at first sexual contact with women (r=0.32, p<.001), and level of education (r=0.31, p<.001). A participant's hukou was negatively and moderately correlated to participant type (r=-0.44, p<.001). Both ethnicity (r=-0.22, p<.001) and sexual orientation (r=-0.18, p<.001) were negatively and weakly correlated to participant type. Lastly, both age at first sexual contact (r=0.16, p<.001) and marital status (r=0.15, p<.001) were positively and weakly correlation to participant type.

The recruitment methods that were utilized in this study were also assessed to verify if they are mediating variables between the relationship among depression, male-on-male IPV, sexual concurrency, gender role beliefs, and drug use. Only income was positively and weakly associated with recruitment method (r=0.22, p<.001). The following demographic characteristics were positively, but very weakly correlated to recruitment method; age (r=0.06, p<.001), age at first sexual contact with men (r=0.08, p<.01), age at first sexual contact with women (r=0.08, p<.05), level of education (r=0.10, p<.01), and participant type (r=0.07, p<.05). Sexual orientation was negatively and very weakly correlated to recruitment method (r=-0.06, p<.05). The following demographic characteristics were very weakly and non-significantly correlated with

recruitment method; ethnicity (r=0.05, p>.05), hukou (r=-0.03, p>.05), and marital status (r=-0.001, p>.05). Table 8.1)

Main Analyses by Hypothesis

Hypothesis 1

A participant's level of held gender role beliefs predicts or reflects a participant's depressive symptoms.

The correlation between the gender role belief summary score and the CES-D-12 item summary score revealed a very weak, yet positive and statistically significant relationship (r=0.09, p<.01). None of the models in the multivariate logistic regression analyses revealed a statistically significant association between gender role beliefs and the dependent variables (p>.05). In the multivariate model regressed on drug use ever, the adjusted odds ratio (AOR) and 95% confidence interval (CI) for gender role beliefs was .98 (.92, 1.04). In the multivariate model regressed on the number of male sexual partners a participant has had in the last 30 days (MSM 30 days) and type of concurrent sexual relationship (MSM+MSW 30 days), the AOR and 95% CI for gender role beliefs were; .99 (.95, 1.04) and 1.02 (.98, 1.07), respectively. Lastly, the multivariate model regressed on one to two forms of IPV (IPV 1-2 forms of abuse) and more than two forms of IPV (IPV >2 forms of abuse) the AOR and 95% CI for gender role beliefs were; .99 (.95, 1.03) and 1.02 (.98, 1.08), respectively. (Tables 8.2, 8.3)

Hypothesis 2

If a participant has had concurrent sexual relationships, then he is more likely to have depressive symptoms.

The correlation between the number of male sexual partners a participant has had in the last 30 days (MSM 30 days), the type of sexually concurrent relationships (MSM+MSW 30 days) and the CES-D-12 item summary score revealed a very weak and statistically insignificant relationship (MSM 30 days: r=0.04, p>.05, MSM+MSW 30 days: r=-0.01, p>.05). None of the models in the multivariate logistic regression analyses revealed a statistically significant association between sexual concurrency and the CES-D-12 item summary score (p>.05). In the multivariate model regressed on the number of male sexual partners a participant has had in the last 30 days (MSM 30 days) the AOR and 95% CI for depression was 1.00 (.96, 1.04). In the multivariate model regressed on the type of concurrent sexual relationship (MSM+MSW 30 days), the AOR and 95% CI for depression was .98 (.93, 1.02). For the multivariate logistic regression of MSM 30 days, the Nagelkerke R^2 value increased from .205 in block one to .266 in block 2. For the multivariate logistic regression of MSM+MSW 30 days, the Nagelkerke R^2 value increased from .127 in block one to .136 in block 2. (Tables 8.2, 8.3)

Hypothesis 3

A participant's amount of male-on-male IPV that he has experienced affects his level of depression.

The correlation between the IPV summary score and the CES-D-12 item summary score revealed a positive, but weak, and statistically significant relationship (r=0.16, p<.001). None of the models in the multivariate logistic regression analyses revealed a statistically significant association between sexual intimate partner violence and the CES-D-12 item summary score (p>.05). In the multivariate model regressed on experiencing one to two

forms of abuse (IPV 1 – 2 forms of abuse) the AOR and 95% CI for depression was 1.04 (1.00, 1.08). In the multivariate model regressed on the experiencing more than two forms of abuse (IPV >2 forms of abuse) the AOR and 95% CI for depression was 1.01 (.97, 1.06). For the multivariate logistic regression of IPV 1- 2 forms of abuse, the Nagelkerke R^2 value increased from .097 in block one to .121 in block 2. For the multivariate logistic regression of IPV >2 forms of abuse, the Nagelkerke R^2 value increased from .110 in block one to .125 in block 2. (Tables 8.2, 8.3)

Hypothesis 4

If a participant has used drugs over the course of his life, then he is more likely to have depressive symptoms.

The correlation between a participant's use of drugs (drug use ever), daily drug use in the last three months, and the CES-D-12 item summary score revealed a very weak relationship (drug use ever: $r=0.08$, $p<.01$, daily drug use in the last 3 months: $r=0.06$, $p>.05$). The model in the multivariate logistic regression analyses revealed a non-significant association between drug use and the CES-D-12 item summary score ($p>.05$). In the multivariate model regressed on the use of drugs with depression, the AOR and 95% CI was 0.99 (.93, 1.05). For the multivariate logistic regression of drug use, the Nagelkerke R^2 value increased from .344 in block one to .691 in block 2. (Tables 8.2, 8.3)

Hypothesis 5

If a participant experiences traditional gender role beliefs, concurrent sexual relationships, male-on-male IPV, and drug use, does a syndemic production of depression exists amongst MSM and money boys in Shanghai, China?

The multivariate logistic regression models revealed only one statistically significant association between the number of male sexual partners in the last 30 days (MSM 30 days) and the type of concurrent sexual relationships a participant had in the last 30 days (MSM+MSW 30 days) (AOR (95%CI) = 1.63 (1.23, 2.20), p<.05). However, every model of the multivariate logistic regressions saw an increase in the Nagelkerke R^2 value from block one (the demographic characteristics) to block two (psychosocial health problems). The largest increase in the Nagelkerke R^2 value from block one to block two was seen in the multivariate model regressed on the use of drugs with a Nagelkerke R^2 value of .344 in block one to a Nagelkerke R^2 value of .691 in block two. (Table 8.3)

Summary of Findings

Demographic Characteristics

In total, 1,352 participants were recruited by three recruitments methods; RDS, CPOL, and venue-based approaches. Of the participants, 631 self-identified as money boys, and the remaining 721 participants were general MSM. The average age of the recruited participants was 29.5±9.6 years, with the age of money boys (25.8±6.6) and general MSM (32.7±10.6) being significantly different (F=139.6, p=.000). Overall, the majority of the participants identified as being either a closeted gay or bisexual (84.2%), yet there was a significant difference in the sexual orientation of money boys, the majority reporting an "other" orientation (57%), and general MSM, the majority identifying as either a closeted gay or bisexual (88.8%) (F=61.7, p=.000). The majority of participants were not married (83.1%), yet the marital status for money boys and general MSM was significantly different (X^2=59.2, p=.000). (Table 1b)

Depression

The health outcome of this study was depression, which was measured by the 12-item CES-D short form survey. Overall, 66% of the study participants had minimally depressive symptoms, 22% had somewhat elevated depressive symptoms, and 7% had very elevated depressive symptoms (Table 2.1). A lesser proportion of money boys had minimally depressive symptoms than general MSM (t=4.6, p=.000). In contrast, 15.6% of money boys had very elevated depressive symptoms, as compared to general MSM (4.4%) (Table 2.2). The distribution of minimal depressive symptoms was significantly different among the recruitment methods (F=4.3, p=.000), as well as significantly different among the recruitment methods for the distribution of those with very elevated depressive symptoms (F=3.6, p=.030) (Table 2.3).

Male-on-Male IPV

The analysis of psychosocial correlates of depression revealed that 32.9% of the sample experienced one to two forms of abuse from a male partner, and 13.8% of the sample experienced two or more forms of abuse from a male partner (Table 4.1). When comparing money boys and general MSM, 63.5% of money boys and 29.7% of general MSM experienced one to two forms of abuse from a male partner (X^2=6.7, p=.000). Likewise, 16.9% of money boys experienced two or more forms of abuse from a male partner, in comparison to 11.1% of general MSM (X^2=9.2, p=.000) (Table 4.2). When comparing the rates of male-on-male IPV between the recruitment methods, 36.1% of RDS recruited men, 27.4% of CPOL recruited men, and 34.2% of venue-based men experienced one or two forms of abuse from a male partner (X^2=8.0, p=.019). The

distribution for more than two forms of abuse from a male partner did not differ significantly between the recruitment methods (X^2=3.3, p=.191) (Table 4.3).

Gender Role Beliefs

In order to assess the held gender role beliefs of the sample, each participant completed a nine-item questionnaire. The responses from each participant were summed, and a gender role belief summary score was calculated, with a higher summary score revealing more "traditional" gender role beliefs. When comparing the gender role beliefs of money boys and general MSM, the money boys had a gender role belief summary score of 17.8±5.5, which was lower than the general MSM summary score of 18.1±5.3 (F=4.8, p=029) (Table 5.1). The gender role summary score was also calculated for the participants each recruitment method, with RDS participants scoring 19.0±5.9, CPOL participants scoring, on average, 17.2±5.0, and venue-based participants averaging 17.4±5.3 (F=13.7, p=.000) (Table 5.2).

Sexual Concurrency

Sexual concurrency is another psychosocial variable being assessed in this study. When comparing the number of male sexual partners money boys and general MSM have had in the last 30 days, the majority of money boys (43.9%) had ten or more partners, while the majority of general MSM (71.8%) had one to three male sexual partners (X^2=160.8, p=.000). The most common type of concurrent sexual relationship for the participants was only with male partners, but 14.7% of money boys and 15.5% of general MSM had both male and female partners over the last 30 days (X^2=0.17, p=.684). While comparing the sexual concurrency of participants from the three recruitment methods, 49.3% of RDS participants, 42.0% of CPOL participants, and 55.5% of venue-based

participants had one to three male sexual partners in the last 30 days, and 22.3% of RDS participants, 30.3% of CPOL participants, and 15.2% of venue-based participants had ten or more male partners in the last 30 days (X^2=70.7, p=.000). The majority of participants from the three recruitment methods had only male partners over the last 30 days, with 71.5% of RDS participants, 79.4% of CPOL participants, and 73.6% of venue-based participants had only male sexual partners in the last 30 days. Of the participants that had both male and female sexual partners, 18.6% of RDS participants, 9.5% of CPOL participants, and 16.8% of venue-based participants had both male and female sexual partners in the last 30 days. The type of concurrent sexual relationships a participant had in the last 30 days and lifetime varied significantly based on the recruitment method (30 days: X^2=15.0, p=.001, lifetime: X^2=26.3, p=.000). (Table 6.2)

Drug Use

The final psychosocial correlate analyzed in this study was the participants' drug use. Overall, 20.7% of the study participants have ever used drugs, with 19.3% of the participants having ever used stimulants. The average quantity of daily drug use in the last three months for the participants was 1.8±8.9 (Table 7.1). Among money boys, 29.0% had used ever used drugs and 26.4% had used stimulants, which was significantly different in comparison to 13.8% and 3.9% of general MSM, respectively (drug use ever: X^2=37.3, p=.000, stimulant use ever: X^2=35.4, p=.000). The daily quantity of drugs used in the last three months for money boys was 2.8±11.5, which was significantly different in comparison to general MSM, who used 0.62±3.8 drugs per day in the last three months (F=23.2, p=.000) (Table 7.2).

Comparing drug use between the participants of the recruitment methods has shown that 17.1% of RDS participants, 16.7% of CPOL participants, and 24.2% of venue-based participants have ever used drugs (X^2=10.9, p=.004). A significant difference of stimulant use between the recruitment methods also exists, with 6.9% of RDS participants, 13.9% of CPOL participants, and 32.1% of venue-based participants have used stimulants (X^2=104.7, p=.004). (Table 7.3)

Syndemic Production

The purpose of this study is to explore the rate of depression among general MSM and money boys, to understand why the rates of depression are different among general MSM and money boys, and how psychosocial correlates interact with the health outcome of depression. It was hypothesized that if a participant experiences traditional gender role beliefs, concurrent sexual relationships, male-on-male IPV, and drug use then a syndemic production of depression exists amongst MSM and money boys in Shanghai, China. When the CES-D-12 summary score was correlated to the sample demographics, the strongest correlations were found with the characteristics of age (r=-0.22, p<.001) and participant type (r=-0.21, p<.-.001) (Table 8.1). The correlation of the psychosocial variables and drug use with depression revealed weak, yet statistically significant, correlations with male-on-male IPV (r=0.16, p<.001), gender role beliefs (r=0.09, p<.01), and drug use ever (r=0.08, p<.01) (Table 8.2).

Multivariate logistic regression models were reported for drug use ever, sexual concurrency with men in the last 30 days (MSM 30 days), sexual concurrency with men and women in the last 30 days (MSM + MSW 30 days), one to two forms of abuse (IPV 1-2 forms of abuse), and two or more forms of abuse (IPV >2 forms of abuse). The

association between depression and each of the dependent variables was non-significant and the AORs yielded null values. However, there was an increase of the Nagelkerke R^2 values after the addition of the psychosocial health variables in block two of the multivariate logistic regressions, with the largest increase in the multivariate model regressed on drug use ever, with a Nagelkerke R^2 value .691, from .344 in block one. (Table 9).

Chapter 5

FINDINGS, CONCLUSIONS, STRENGTHS AND LIMITATIONS, IMPLICATIONS AND RECOMMENDATIONS

Findings

Demographic Characteristics

We have sampled 1,352 of the MSM living in Shanghai, China. Overall, the sampled men are, on average, 29.5±9.6 years old, Han, of a non-Shanghai residency status, have received more than a high school education, make more than 1000 Yuan in one month, are a closeted gay or bisexual, and unmarried (Table 1a). Of course, there are significant differences between the subsets of the population, with the greatest significant difference between money boys and MSM (Table 1b). In addition, the demographics of the sample differed significantly based on the recruitment method (Table 1c).

Rate of Depression, Psychosocial Correlates, and Drug Use among the Sample

As measured by the CES-D-12 item survey, our sample of MSM averaged a summary score of 20.4±6.3, an average score yielding an interpretation of "minimally depressive" symptoms (Table 2.1). When the sample was stratified into minimal, somewhat elevated, and very elevated depressive symptoms, 29% of the sample fell in the range of "somewhat elevated" to "very elevated" depressive symptoms (Table 3.1). This elevated rate of depression among Chinese MSM is consistent with the high rates of depression among MSM in other urban centers (Mills et al., 2004; Liu et al., 2012).

The rate of male-on-male IPV among this sample of Chinese MSM was substantial. Overall, 46.7% of the sample had experienced one or more form of abuse

from a male sexual partner. The most common forms abuse among the sample were verbal threats, being hit or having something thrown at the participant, and verbally threatening to physically harm someone for which they care (Table 4.1). Male-on-male IPV was weakly, but significantly correlated to depression among the sample.

Because gender role beliefs have not been assessed in this population before, there is no precedent or baseline in which to gauge the significance of the results from this study. That being said, the held gender role beliefs summary score for the overall sample was 17.5±5.6, indicating a more modern view of gender roles (Table 5.1). Gender role beliefs were very weakly, but statistically correlated to depression. Perhaps gender role beliefs were not a proper assessment of social roles, considering the majority of the gender role scale questions dealt with the relationship between men and women, and not all of the participants were intimately involved with both men and women.

A substantial portion of the sample, nearly 22%, had had ten or more male sexual partners in the last 30 days, and the vast majority of the sample had more than ten male sexual partners in their lifetime (75.4%). Additionally, 15.2% of the sample had both male and female sexual partners in the last 30 days, indicating a presence of overlapping sexual relationships between the heterosexual and homosexual population in Shanghai (Table 6.1). Correlation analysis revealed that depression and sexual concurrency were not correlated.

Lastly, 20.7% of the population had reported drug use over the course of their lifetime, and 19.3% had reported stimulant use (Table 7.1). Drug use ever was significantly, but very weakly, correlated to depression. Daily drug use in the last three months was not correlated to depression, but was weakly and significantly correlated to

drug use ever, indicating that those having ever used drugs have used drugs on a daily basis in the current stage of their life (Table 8.2).

Moderating Variables

The subpopulations present in this study were money boys and general MSM. By nature, these two subpopulations are distinct because money boys sell sex in exchange for money, while general MSM may or may not purchase sex from money boys. Given this, participant type was examined to understand its affect as a moderating variable. As table 1b indicates, the demographic characteristics were significantly different between money boys and general MSM ($p<.001$). On average, money boys were younger, had their first sexual contact at a younger age, were of ethnic minority, were of a non-Shanghai residency status, had a higher monthly income, were of an "other" sexual orientation, and fewer were not married than general MSM (Table 1b).

Money boys also displayed a significantly higher rate of depression than general MSM ($F=66.3$, $p=.000$), and more elevated depressive symptoms than general MSM (Tables 2.2 and 3.2). Also of significance is money boys' increased experience of male-on-male IPV, with 16.9% of money boys and 11.1% of general MSM experiencing more than two forms of abuse from a male partner ($X^2=9.2$, $p=.000$) (Table 4.2). Perhaps because of the nature of their work, money boys had a significantly higher number of male sexual partners in the last 30 days than their general MSM counterparts ($X^2=160.8$, $p=.000$). Likewise, a higher proportion, 81.8%, of money boys exclusively had male sexual partners in the last 30 days as compared to general MSM. Of the general MSM, 15.5% had both male and female partners in the last 30 days (Table 6.1). Considering that

25.0% of the general MSM were married at the time of recruitment, it is not surprising that so many general MSM had both male and female sexual partners in the last 30 days.

In addition to money boys displaying more depressive symptoms, experiencing more male-on-male IPV, and having more male sexual partners, money boys have also used more drugs over the course of their lifetime, and have used more drugs per day in the last three months in comparison to general MSM. The most commonly used drug among money boys were stimulants, of which 26.4% of money boys had used, in comparison to 13.1% of general MSM (X^2=37.4, p=.000) (Table 7.2). Again, perhaps because of the working environment for money boys stimulant and drug use among male sex workers is a common practice in Shanghai, or perhaps drug use is a coping mechanism to deal with the nature of their work.

Based on the evidence gathered from previous studies examining the effects of recruitment method on sociodemographics, sexual behavior, and substance use, recruitment method was examined as a potential moderating variable in the syndemic production of depression among MSM in Shanghai (Grov, 2012; Guo et al., 2011). Demographic characteristics differed significantly ($p<.05$) between the recruitment methods, with the exception of participant *hukou* (Table 1c).

Recruitment method also significantly affected the rates of depression among the participants, with RDS recruited MSM having the highest CES-D-12 summary score of 20.9±6.1, followed by CPOL participants, and venue-based participants (F=5.1, p=.006) (Table 2.3). In addition, there was a significant difference of depressive symptoms based on recruitment method with RDS participants having the highest rate of somewhat or very elevated depressive symptoms (Table 3.3). Male-on-male IPV differed between

recruitment methods for one variable, “one to two forms of abuse,” with RDS participants experiencing more IPV than CPOL and venue-based participants (X^2=8.0, p=.019) (Table 4.3).

CPOL participants having the highest proportion of men having more than ten partners in the last 30 days (30.3% of participants), as compared to RDS and venue-based recruited men (X^2=70.7, p=.000). Similarly, CPOL recruited MSM had the highest proportion, 79.4%, of men who only had male sexual partners, whereas RDS recruited MSM had the highest proportion, 18.6%, of men with both male and female partners (X^2=15.0, p=.001) (Table 6.2). Surprisingly, venue-based participants reported the smallest proportion of men having more than 10 male partners in the last 30 days, even though these MSM were recruited from bathhouses and bars (Table 6.2). Unsurprisingly, the highest proportion of men that had used drugs over the course of their life were venue-based MSM, and 32.1% of venue-based MSM had used stimulants, as compared to 13.9% of CPOL recruited men, and 6.9% of RDS recruited men (Table 7.3). Drug use is a common practice within bathhouses and bars, and men recruited from these venues are likely to have been exposed to these behaviors. Presumably, recruitment methods had an effect on the characteristics and behaviors of the sample because each recruitment tapped into a different network of MSM in Shanghai, which is crucial to be cognizant of while developing substance use and sexual risk reduction interventions for MSM in Shanghai.

It is important to note that participant type had a statistically significant (p<.001), although weak to moderate, correlation to every demographic variable assessed in this study. Additionally, recruitment method has a statistically significant (p<.05), although weak, correlation to the majority of the demographic variables.

Syndemic Production

The five models constructed in the multivariate logistic regression each saw an increase in the Nagelkerke R^2 value as the psychosocial health problems were added the models, alluding to the psychosocial variables greater explanation to the variability of the dependent variables of drug use, number of male sexual partners in the last 30 days, male and female sexual concurrent relationships in the last 30 days, and male-on-male IPV. However, the AORs associating depression (CES-D-12 summary score) and the dependent variables are not a departure from the null. Additionally, the remaining AORs assessing the association between the psychosocial independent and dependent variables do not depart from the null value. Consequently, we cannot conclude that there is a syndemic production of depression among MSM in Shanghai, China. However, the preceding frequency tables of depression, male-on-male IPV, sexual concurrency, and drug use do confirm that MSM in Shanghai are at risk of depression, violent relationships, risky sexual behavior, and substance abuse problems. Although there were not any statistically significant associations among these co-occurring psychosocial and drug use behaviors, these risks still exist among this population, and require additional research and interventions in order to reduce the risk among the MSM population in Shanghai, China.

Conclusions

This study aimed to determine the rates of depression, gender role beliefs, sexual concurrency, male-on-male IPV, and drug use among MSM in Shanghai, China. Ultimately, this study aimed to assess the production of depression due to the presence of

"traditional" gender role beliefs, concurrent sexual relationships, male-on-male IPV, and drug use among money boys and general MSM in Shanghai, China. In this pursuit, the results revealed that many (29%) of the participants exhibit slightly elevated to highly elevated depressive symptoms, have had multiple sexual partners in the last 30 days, have experienced multiple forms of abuse from a male sexual partner, have used drugs over the course of their life, and have used drugs on a daily basis in the last three months. Although correlational and multivariate logistic regression analyses did not reveal strong and statistically significant associations between depression, the psychosocial correlates and drug use, money boys and general MSM within this community of Shanghai are experiencing these afflictions at elevated rates, which are also confirmed by other studies (He et al., 2007; Wong et al., 2008; Dunkle et al., 2013). The existence of these co-occurring psychosocial and substance abuse problems among MSM indicate the need for an intervention that reduce these risks and improve the health of money boys and MSM in Shanghai, China.

Strengths and Limitations

A significant strength of this study was the utilization of multiple recruitment methods, which allowed for a more representative population of MSM in Shanghai, China. Additionally, this sample recruited a large sample size of both money boys and general MSM, which gives researchers a greater insight into the behavioral and health differences between the two populations.

This study was limited by the self-reported nature of individual behavior; consequently, the measures utilized in this study may not be an accurate representation of

the sample. Participants enrolled in the Shanghai Men's Study were given an anonymous survey, completed in one hour, in Mandarin Chinese. Therefore, participants were assumed to be able to speak and read in Mandarin. Additionally, participants of the Shanghai Men's Study were assumed to answer all of survey to the best of their ability and with full honesty. Because this study recruited MSM participants from Shanghai, this study's results may not apply to other MSM communities in China. In addition, this study utilized purposive sampling. This sampling technique is prone to researcher bias and is not representative of the entire MSM population of China.

Implication and Recommendations for Further Study

The most striking contrasts in this study are the differences between the demographics and behaviors of money boys and general MSM. Money boys and general MSM differed significantly on nearly every variable incorporated into this study. In general, money boys are younger, less educated, less likely to identify as gay or bisexual, experience higher rates of depression and IPV, have more male sexual partners, and use more drugs than general MSM. These differences confirm that although both money boys and general MSM engage in the similar sexual behavior, they are indeed unique and separate populations. Consequently, more research should be conducted on how to develop interventions that fit the unique needs of money boys in order to reduce their risk of depression, male-on-male IPV, risky sexual behavior, and substance abuse.

General MSM have their own unique needs that should be addressed by continued research and targeted interventions. In our sample, 25% of the general MSM were married, and 15.5% had both male and female partners in the last 30 days. In addition,

88.8% of the general were of the closeted gay or bisexual orientation. With these results it is safe to assume that the general MSM that engage in both male and female sexual behavior are not disclosing their concurrent sexual relationships to the female partners. Although sexually transmitted infections (STIs) were not addressed in this study, the general MSM recruited from this study have the potential to transmit STIs to their unknowing female partners. Therefore, research should be conducted that addresses the level of male and female sexual concurrency within the general MSM population that aims to identify the level of relationship disclosure and the condom usage of this population with their female sexual partner.

Of all the MSM in China, this study only sampled 1,352 of the MSM living in Shanghai, China. Additional research needs to be conducted be conducted in other areas that are not as urban as Shanghai. At this point in time, the majority of research conducted among Chinese MSM is within urban populations. Undoubtedly, there are MSM living in smaller cities or rural areas of China. The major challenge of identifying MSM in China is that so many of the men are closeted, just as the results of our study suggest. An effective technique to recruiting MSM in China is to utilize multiple recruitment methods in order to sample a more representative sample of MSM, just as this study has done.

Table 1a. Sample Demographics, Stratified by Recruitment Method and Participant Type

Characteristic \ Sample Subset	RDS: MB n= 200	RDS: MSM n= 204	CPOL: MB n= 203	CPOL: MSM n= 199	Venue-based: MB n= 228	Venue-based: MSM n= 318	Overall N=1,352
			Mean (SD)				
Age (years)	24.3 (4.9)	34.9 (11.6)	24.7 (4.9)	30.7 (9.2)	28.2 (8.4)	32.6 (10.5)	29.5 (9.6)***
Age at first sexual contact with men *(years)*	18.9 (4.7)	20.8 (7.1)	17.4 (4.0)	20.4 (6.3)	20.6 (5.9)	21.2 (6.2)	20.0 (6.0)**
Age at first sexual contact with women (years)	18.8 (3.2)	21.9 (5.1)	18.1 (2.9)	21.0 (4.2)	19.8 (3.8)	22.2 (4.5)	20.4 (4.3)
			n (%)				
Ethnicity							
Han	187 (93.5)	199 (98.5)	191 (94.6)	188 (95.4)	213 (93.4)	304 (95.6)	1,303 (96.4)
Other	13 (6.5)	3 (1.5)	11 (5.5)	9 (4.6)	15 (6.6)	14 (4.4)	45 (3.3)
Hukou							
Shanghai	5 (2.5)	77 (37.8)	53 (26.6)	60 (51.7)	9 (4.0)	120 (37.8)	307 (22.7)
Other	195 (97.5)	127 (62.3)	142 (71.4)	56 (48.3)	219 (96.1)	198 (62.0)	1043 (77.1)
Level of Education							
Middle School or less	80 (40.2)	68 (33.5)	92 (45.3)	27 (13.6)	83 (36.4)	74 (23.3)	424 (31.4)
High School or equivalent	90 (45.2)	71 (35.0)	101 (49.8)	49 (24.6)	112 (49.1)	93 (29.3)	516 (27.2)
College or more	29 (14.6)	64 (31.5)	10 (4.9)	123 (61.8)	33 (14.5)	151 (47.5)	410 (30.3)
Monthly Income (Yuan)							
<1000	6 (3.0)	19 (9.3)	2 (1.0)	27 (13.6)	1 (.40)	13 (4.1)	68 (5.0)
1000-2999	89 (44.7)	115 (56.4)	60 (29.7)	52 (26.3)	56 (24.6)	113 (35.5)	485 (35.9)
3000-4999	71 (35.7)	44 (21.6)	94 (46.5)	70 (35.4)	77 (33.8)	100 (31.4)	456 (33.7)
≥5000	33 (16.6)	26 (12.8)	46 (22.8)	49 (24.8)	94 (41.2)	92 (28.9)	340 (25.1)
Sexual Orientation							
Openly gay/bisexual	26 (13.0)	23 (11.3)	13 (6.4)	18 (9.0)	15 (6.6)	26 (11.4)	121 (8.9)
Closeted gay/bisexual	147 (73.5)	174 (85.3)	153 (75.4)	179 (90.0)	200 (87.8)	285 (89.6)	1,138 (84.2)
Other	27 (13.5)	7 (3.4)	37 (18.2)	2 (1.0)	13 (5.7)	7 (2.2)	93 (6.8)
Marital Status							
Married	10 (5.0)	49 (24.0)	13 (6.6)	34 (17.2)	38 (16.7)	77 (24.2)	221 (16.3)
Other	190 (95.0)	155 (76.0)	184 (93.4)	164 (82.8)	190 (83.3)	241 (75.8)	1,124 (83.6)

Note: N varies based on missing responses. *p<.05 **p<.01 *** p<.001

Table 1b. Sample Demographics, Stratified by Participant Type

Participant type / Characteristic	**Money boys** **n= 631**	**General MSM** **n= 721**	**Overall** **N=1,352**	**Significance** **(F or X^2, p)**
		Mean (SD)		
Age (years)	25.8 (6.6)	32.7 (10.6)	29.5 (9.6)***	F=139.6, p=.000
Age at first sexual contact with men *(years)*	19.0 (5.2)	20.9 (6.5)	20.0 (6.0)***	F=21.1, p=.000
Age at first sexual contact with women (years)	19.0 (3.4)	21.8 (4.7)	20.4 (4.3)***	F=39.6, p=.000
		n (%)		
Ethnicity				
Han	601 (95.3)	702 (97.4)	1303 (96.4)	X^2=74.2, p=.000
Other	28 (4.4)	17 (2.4)	45 (3.3)	
Hukou				
Shanghai	19 (3.0)	288 (40.0)	307 (22.7)	X^2=260.7, p=.000
Other	610 (96.7)	433 (60.1)	1043 (77.1)	
Level of Education				
Middle School or less	255 (40.4)	169 (23.4)	424 (31.4)	X^2=203.5, p=.000
High School or equivalent	303 (48.0)	213 (29.5)	516 (38.2)	
College or more	72 (11.4)	338 (46.9)	410 (30.3)	
Monthly Income (Yuan)				
<1000	9 (1.4)	59 (8.2)	68 (5.0)	
1000-2999	205 (32.5)	280 (38.8)	485 (35.9)	X^2=44.3, p=.000
3000-4999	242 (38.4)	214 (29.7)	456 (33.7)	
≥5000	173 (27.4)	167 (23.2)	340 (25.2)	
Sexual Orientation				
Openly gay/bisexual	54 (8.6)	67 (9.3)	121 (9.0)	X^2=61.8, p=.000
Closeted gay/bisexual	500 (79.2)	640 (88.8)	1138 (84.2)	
Heterosexual or other	77 (12.2)	16 (2.2)	93 (6.9)	
Marital Status				
Married	61 (9.7)	180 (25.0)	221 (16.3)	X^2=59.2, p=.000
Other	564 (89.4)	540 (74.9)	1124 (83.1)	

Note: N varies based on missing responses. *p<.05 **p<.01 *** p<.001

Table 1c. Sample Demographics of Sample, Stratified by Recruitment Method					
Recruitment type / Characteristic	**RDS n= 404**	**CPOL n= 402**	**Venue-based n= 546**	**Overall N=1,352**	**Significance (F or X^2, p)**
Mean (SD)					
Age (years)	29.7 (10.4)	27.7 (7.9)	30.8 (9.9)	29.5 (9.6)***	F=12.2, p=.000
Age at first sexual contact with men (years)	19.9 (6.1)	18.9 (5.5)	21.0 (6.1)	20.0 (6.0)***	F=14.2, p=.000
Age at first sexual contact with women (years)	20.4 (4.5)	19.5 (3.9)	21.1 (4.4)	20.4 (4.3)***	F=9.0, p=.000
n (%)					
Ethnicity					
Han	386 (95.5)	400 (100)	517 (94.7)	1303 (96.4)	X^2=259.4, p=.000
Other	16 (4.0)	0 (0)	29 (5.3)	45 (3.3)	
Hukou					
Shanghai	82 (20.3)	96 (23.9)	129 (23.6)	307 (22.7)	X^2=2.0, p=.372
Other	322 (79.7)	304 (75.6)	417 (76.4)	1043 (77.1)	
Level of Education					
Middle School or less	148 (36.6)	119 (29.6)	157 (28.8)	424 (31.4)	X^2=19.2, p=.014
High School or equivalent	161 (39.9)	150 (37.3)	150 (27.5)	516 (38.2)	
College or more	93 (23.0)	133 (33.1)	133 (24.4)	410 (30.3)	
Monthly Income (Yuan)					
<1000	25 (6.2)	29 (7.2)	14 (2.6)	68 (5.0)	
1000-2999	204 (50.5)	112 (27.9)	169 (31.0)	485 (35.9)	X^2=91.5, p=.000
3000-4999	115 (28.5)	164 (40.8)	177 (32.4)	456 (33.7)	
≥5000	59 (14.6)	95 (23.6)	186 (34.1)	340 (24.2)	
Sexual Orientation					
Openly gay/bisexual	49 (12.1)	31 (7.7)	41 (7.5)	121 (9.0)	X^2=60.9, p=.000
Closeted gay/bisexual	321 (79.5)	332 (82.6)	485 (88.8)	1138 (84.2)	
Other	34 (8.4)	39 (9.7)	20 (3.7)	93 (6.9)	
Marital Status					
Married	59 (14.6)	47 (11.7)	115 (21.1)	221 (16.4)	X^2=45.7, p=.000
Other	345 (85.4)	348 (86.6)	431 (78.9)	1124 (83.1)	
Note: N varies based on missing responses.					*p<.05 **p<.01 *** p<.001

Table 1d. Sample Demographics of Venue-Based Sampling, Stratified by Recruitment Venue and Participant Type							
Sample Subset / Characteristic	**Internet Money Boys, n=142**	**Internet MSM, n=158**	**Bar, Money Boys, n=58**	**Bar, MSM, n=71**	**Bath House, Money Boys, n=27**	**Bath House, MSM, n=89**	**Overall, N= 546**
			Mean (SD)				
Age (years)	28.6 (8.6)	31.0 (9.4)	26.7 (7.9)	29.8 (9.3)	29.4 (8.1)	37.8 (11.5)	30.8 (9.9)***
Age at first sexual contact with men *(years)*	20.9 (5.8)	21.5 (6.4)	19.3 (5.8)	19.9 (6.4)	21.8 (6.9)	31.8 (5.5)	21.0 (6.1)
Age at first sexual contact with women (years)	20.0 (3.6)	22.4 (4.7)	19.4 (4.4)	20.7 (4.5)	19.9 (3.8)	22.5 (4.2)	21.2 (4.3)***
			n (%)				
Ethnicity							
Han	131 (92.3)	150 (94.9)	54 (93.1)	67 (94.4)	27 (100)	87 (97.8)	516 (94.5)
Other	11 (7.75)	8 (5.06)	4 (6.9)	4 (5.63)	0 (0)	2 (2.25)	29 (5.31)
Hukou							
Shanghai	3 (2.11)	62 (39.2)	3 (5.2)	26 (36.6)	3 (11.1)	32 (36.0)	129 (26.3)
Other	139 (97.9)	96 (60.8)	55 (94.8)	45 (63.4)	24 (88.9)	57 (64.0)	416 (76.2)
Level of Education							
Middle School or less	51 (35.9)	25 (15.8)	20 (34.5)	10 (14.1)	11 (40.7)	39 (43.8)	156 (28.6)
High School or equivalent	70 (49.3)	47 (29.7)	30 (51.7)	13 (18.3)	12 (44.4)	33 (37.1)	205 (37.5)
College or more	21 (14.9)	86 (54.4)	8 (13.8)	48 (67.6)	4 (14.8)	17 (19.1)	184 (33.7)
Monthly Income (Yuan)							
<1000	0 (0)	6 (3.80)	0 (0)	6 (8.45)	1 (3.7)	1 (1.1)	14 (2.6)
1000-2999	31 (21.8)	39 (24.7)	16 (27.6)	19 (26.8)	9 (33.3)	55 (62.0)	169 (31.0)
3000-4999	52 (36.6)	57 (36.1)	16 (27.6)	19 (26.8)	9 (33.3)	24 (27.0)	177 (32.4)
≥5000	59 (41.5)	56 (35.4)	26 (44.8)	27 (38.0)	8 (29.6)	9 (10.1)	185(33.9)
Sexual Orientation							
Openly gay/bisexual	10 (7.0)	9 (5.7)	3 (5.17)	11 (15.5)	2 (7.41)	6 (6.7)	41 (7.51)
Closeted gay/bisexual	123 (86.6)	142 (89.9)	52 (89.7)	58 (81.7)	17 (63.0)	83 (93.3)	484 (88.6)
Other	9 (6.3)	5 (3.2)	3 (5.17)	2 (2.82)	8 (29.6)	2 (2.2)	20 (3.66)
Marital Status							
Married	25 (17.6)	35 (22.2)	7 (12.1)	8 (11.3)	6 (22.2)	34 (38.2)	115 (21.1)
Other	117 (82.4)	123 (77.8)	51 (87.9)	63 (88.7)	21 (77.8)	55 (61.8)	430 (78.8)
Note: N varies based on missing responses.							*p<.05 **p<.01 *** p<.001

Table 1e. Sample Demographics of Venue-Based Sampling, Stratified by Recruitment Venue; Internet, Bar, or Bath House					
Recruitment venue / Characteristic	**Internet n=300**	**Bar n=129**	**Bath House n=117**	**Overall N= 546**	**Significance (F or X^2, p)**
			Mean (SD)		
Age (years)	29.9 (9.1)	28.4 (8.8)	35.7 (11.3)	30.8 (9.9)	F=21.2, p=.000
Age at first sexual contact with men *(years)*	21.2 (6.1)	19.6 (6.1)	21.8 (5.8)	21.0 (6.1)	F=4.6, p=.011
Age at first sexual contact with women (years)	21.2 (4.3)	20.0 (4.5)	22.0 (4.3)	21.1 (4.4)	F=4.2, p=.016
			n (%)		
Ethnicity					
Han	281 (93.7)	121 (93.8)	115 (98.3)	517 (94.7)	X^2=3.8, p=.146
Other	19 (6.3)	8 (6.2)	2 (1.7)	29 (5.3)	
Hukou					
Shanghai	65 (21.7)	29 (22.5)	35 (29.9)	129 (23.6)	X^2=4.1, p=.397
Other	235 (78.3)	100 (77.5)	82 (70.1)	417 (76.4)	
Level of Education					
Middle School or less	76 (25.3)	30 (23.3)	51 (43.6)	157 (28.8)	X^2=29.7, p=.000
High School or equivalent	117 (39.0)	43 (33.3)	45 (38.5)	205 (37.5)	
College or more	107 (35.7)	56 (43.4)	21 (17.9)	184 (33.7)	
Monthly Income (Yuan)					
<1000	6 (2.0)	6 (4.7)	2 (1.7)	14 (2.6)	
1000-2999	70 (23.3)	35 (27.1)	64 (54.7)	169 (31.0)	X^2=49.1, p=.000
3000-4999	109 (36.3)	35 (27.1)	33 (28.2)	177 (32.4)	
≥5000	115 (38.3)	53 (41.1)	18 (15.4)	186 (34.1)	
Sexual Orientation					
Openly gay/bisexual	19 (6.3)	14 (10.9)	8 (6.8)	41 (7.5)	X^2=14.0, p=.173
Closeted gay/bisexual	267 (89.0)	110 (85.3)	108 (92.3)	485 (88.8)	
Other	14 (4.6)	5 (3.9)	1 (0.9)	20 (3.7)	
Marital Status					
Married	60 (20.0)	15 (11.6)	40 (34.2)	115 (21.1)	X^2=30.6, p=.000
Other	240 (80.0)	114 (88.4)	77 (65.8)	431 (78.9)	
Note: N varies based on missing responses.				*p<.05 **p<.01 *** p<.001	

Table 2.1 Rate of Depression amongst Chinese MSM and Money Boys, Stratified by Recruitment Method							
Sample Subset / Variable	**RDS: MB n=200**	**RDS: MSM n=204**	**CPOL: MB n=203**	**CPOL: MSM n=199**	**Venue-based: MB n=228**	**Venue-based: MSM n=318**	**Overall N=1352**
	n (%)	**n (%)**	**n (%)**	**n (%)**	**n (%)**	**n (%)**	**n (%)**
You were bothered by things that usually don't bother you							
Rarely or none (less than 1 day)	45 (22.8)	66 (31.9)	59 (29.1)	72 (36.2)	55 (24.1)	85 (26.7)	382 (28.3)
Some or little (1-2 days)	102 (51.0)	102 (50.0)	81 (39.9)	89 (44.7)	118 (51.8)	153 (48.1)	645 (47.7)
Occasionally/moderate (3-4 days)	37 (57.8)	27 (42.2)	43 (21.2)	31 (15.6)	38 (16.7)	64 (20.1)	240 (17.8)
Most or all (5-7 days)	16 (8.1)	9 (4.3)	20 (9.9)	7 (3.5)	16 (7.0)	16 (5.0)	84 (6.2)
You did not feel like eating, your appetite was poor							
Rarely or none (less than 1 day)	85 (42.5)	113 (55.4)	104 (51.2)	130 (65.3)	119 (52.2)	183 (57.5)	734 (54.3)
Some or little (1-2 days)	76 (38.0)	72 (35.3)	70 (34.5)	53 (26.6)	75 (32.9)	98 (30.8)	444 (32.8)
Occasionally/moderate (3-4 days)	30 (15.2)	15 (7.3)	26 (12.8)	13 (6.5)	23 (10.1)	26 (8.2)	133 (9.8)
Most or all (5-7 days)	9 (4.6)	3 (1.5)	3 (1.5)	3 (1.5)	10 (4.4)	11 (3.5)	39 (2.9)
You felt that you could not shake off the blues even with help from your family or friends							
Rarely or none (less than 1 day)	75 (37.5)	97 (47.5)	96 (47.3)	113 (56.8)	112 (49.1)	159 (50.0)	652 (48.2)
Some or little (1-2 days)	64 (32.0)	61 (29.9)	59 (29.1)	59 (29.6)	66 (28.9)	99 (31.1)	408 (30.2)
Occasionally/moderate (3-4 days)	27 (13.7)	23 (11.2)	29 (14.3)	18 (9.0)	37 (16.2)	46 (14.5)	180 (13.3)
Most or all (5-7 days)	34 (17.3)	21 (10.2)	18 (8.9)	9 (4.5)	13 (5.7)	14 (4.4)	109 (8.1)
You had trouble keeping your mind on what you were doing							
Rarely or none (less than 1 day)	60 (30.0)	88 (43.1)	75 (36.9)	93 (46.7)	93 (40.8)	144 (45.3)	553 (40.9)
Some or little (1-2 days)	97 (48.5)	90 (48.5)	71 (35.0)	83 (41.7)	89 (39.0)	120 (37.7)	550 (40.7)
Occasionally/moderate (3-4 days)	28 (14.2)	20 (9.7)	46 (22.7)	17 (8.5)	39 (17.1)	37 (11.6)	187 (13.8)
Most or all (5-7 days)	15 (7.6)	6 (2.9)	11 (5.4)	6 (3.0)	7 (3.1)	17 (5.3)	62 (4.6)

You felt depressed							
Rarely or none (less than 1 day)	48 (24.0)	66 (32.4)	55 (27.1)	75 (37.7)	59 (25.9)	112 (35.2)	415 (30.7)
Some or little (1-2 days)	86 (43.0)	101 (49.5)	86 (42.4)	88 (44.2)	118 (51.8)	144 (45.3)	623 (46.1)
Occasionally/moderate (3-4 days)	46 (23.4)	27 (13.1)	37 (18.2)	32 (16.1)	37 (16.2)	56 (17.6)	235 (17.4)
Most or all (5-7 days)	19 (9.6)	10 (4.9)	25 (12.3)	4 (2.0)	14 (6.1)	5 (1.6)	77 (5.7)
You felt that everything you did was an effort							
Rarely or none (less than 1 day)	64 (32.0)	93 (45.6)	90 (44.3)	114 (57.3)	111 (48.7)	164 (51.6)	636 (47.0)
Some or little (1-2 days)	93 (46.5)	78 (38.2)	74 (36.5)	60 (30.2)	81 (35.5)	116 (36.5)	502 (37.1)
Occasionally/moderate (3-4 days)	28 (14.3)	28 (13.6)	27 (13.3)	21 (10.6)	26 (11.4)	32 (10.1)	162 (12.0)
Most or all (5-7 days)	14 (7.1)	4 (1.9)	12 (5.9)	4 (2.0)	10 (4.4)	6 (1.9)	50 (3.7)
You felt fearful							
Rarely or none (less than 1 day)	109 (54.5)	135 (66.2)	96 (47.3)	129 (64.8)	130 (57.0)	215 (67.6)	814 (60.2)
Some or little (1-2 days)	63 (31.5)	50 (24.5)	54 (26.6)	50 (25.1)	66 (28.9)	81 (25.5)	364 (26.9)
Occasionally/moderate (3-4 days)	13 (6.5)	17 (8.3)	40 (19.7)	14 (7.0)	23 (10.1)	13 (4.1)	120 (8.9)
Most or all (5-7 days)	15 (7.6)	2 (1.0)	12 (5.9)	6 (3.0)	9 (3.9)	9 (2.8)	53 (3.9)
Your sleep was restless							
Rarely or none (less than 1 day)	37 (18.5)	75 (36.8)	43 (21.2)	81 (40.7)	74 (32.5)	142 (44.7)	452 (33.4)
Some or little (1-2 days)	66 (33.5)	71 (34.5)	52 (25.6)	67 (33.7)	71 (31.1)	98 (30.8)	425 (31.4)
Occasionally/moderate (3-4 days)	53 (26.5)	37 (18.1)	64 (31.5)	38 (19.1)	60 (26.3)	54 (17.0)	306 (22.6)
Most or all (5-7 days)	44 (22.3)	20 (9.7)	44 (21.7)	13 (6.5)	23 (10.1)	24 (7.5)	168 (12.4)
You talked less than usual							
Rarely or none (less than 1 day)	96 (48.0)	106 (52.0)	61 (30.0)	116 (58.3)	123 (53.9)	173 (54.4)	675 (49.9)
Some or little (1-2 days)	70 (35.5)	67 (32.4)	95 (46.8)	60 (30.2)	73 (32.0)	100 (31.4)	465 (34.4)
Occasionally/moderate (3-4 days)	24 (12.0)	22 (10.8)	36 (17.7)	16 (8.0)	21 (9.2)	37 (11.6)	156 (11.5)
Most or all (5-7 days)	10 (5.1)	9 (4.3)	11 (5.4)	5 (2.5)	11 (4.8)	8 (2.5)	54 (4.0)
You felt lonely							
Rarely or none (less than 1 day)	67 (33.5)	81 (39.7)	42 (20.7)	88 (44.2)	92 (40.4)	139 (43.7)	509 (37.6)
Some or little (1-2 days)	61 (31.1)	76 (36.7)	70 (34.5)	65 (32.7)	72 (31.6)	101 (31.8)	445 (32.9)
Occasionally/moderate (3-4 days)	41 (20.5)	27 (13.2)	58 (28.6)	31 (15.6)	46 (20.2)	59 (18.6)	262 (19.4)
Most or all (5-7 days)	30 (15.3)	20 (9.7)	33 (16.3)	15 (7.5)	18 (7.9)	19 (6.0)	135 (10.0)
You felt sad							
Rarely or none (less than 1 day)	60 (30.0)	83 (40.7)	47 (23.2)	87 (43.7)	76 (33.3)	147 (46.2)	500 (37.0)
Some or little (1-2 days)	67 (33.5)	86 (42.2)	83 (40.9)	75 (37.7)	95 (41.7)	112 (35.2)	518 (38.3)
Occasionally/moderate (3-4 days)	45 (22.5)	23 (11.3)	49 (24.1)	28 (14.1)	35 (15.4)	49 (15.4)	229 (16.9)
Most or all (5-7 days)	28 (14.2)	11 (5.3)	24 (11.8)	9 (4.5)	22 (9.6)	10 (3.1)	104 (7.7)

You could not get "going"							
Rarely or none (less than 1 day)	98 (49.0)	135 (66.2)	89 (43.8)	137 (68.8)	129 (56.6)	230 (72.3)	818 (60.5)
Some or little (1-2 days)	67 (33.5)	57 (27.9)	72 (35.5)	45 (22.6)	62 (27.2)	67 (21.1)	370 (27.4)
Occasionally/moderate (3-4 days)	19 (9.6)	10 (4.8)	31(15.3)	15 (7.5)	27 (11.8)	18 (5.7)	120 (8.9)
Most or all (5-7 days)	16 (8.1)	2 (1.0)	11 (5.4)	2 (1.0)	10 (4.4)	3 (0.9)	44 (3.3)
Overall CES-D sum score (μ, σ)	**22.5 (6.1)**	**19.4 (5.7)**	**22.5 (6.9)**	**18.6 (5.8)**	**20.4 (6.3)**	**19.1 (6.0)**	**20.4 (6.3)****

Note: N varies based on missing responses. *p<.05 **p<.01 *** p<.001

Table 2.2 Rate of Depression amongst the Sample, Stratified by Participant Type				
Participant Type / Variable	**Money boys n=631 n (%)**	**General MSM n=721 n (%)**	**Overall N=1352 n (%)**	**Significance (F or X^2, p)**
You were bothered by things that usually don't bother you				
Rarely or none (less than 1 day)	159 (25.2)	223 (30.9)	382 (28.3)	X^2= 12.3 p=.006
Some or little (1-2 days)	301 (47.8)	344 (47.7)	645 (47.7)	
Occasionally / moderate (3-4 days)	118 (18.7)	122 (16.9)	240 (17.8)	
Most or all (5-7 days)	52 (8.3)	32 (4.4)	84 (6.2)	
You did not feel like eating, your appetite was poor				
Rarely or none (less than 1 day)	308 (48.9)	426 (59.2)	734 (54.3)	X^2= 18.4 p= .000
Some or little (1-2 days)	221 (35.1)	223 (31.0)	444 (32.8)	
Occasionally / moderate (3-4 days)	79 (12.5)	54 (7.5)	133 (9.8)	
Most or all (5-7 days)	22 (3.5)	17 (2.4)	39 (2.9)	
You felt that you could not shake off the blues even with help from your family or friends				
Rarely or none (less than 1 day)	283 (44.9)	369 (51.3)	652 (48.2)	X^2= 12.0 p= .007
Some or little (1-2 days)	189 (30.0)	219 (30.5)	408 (30.2)	
Occasionally / moderate (3-4 days)	93 (14.8)	87 (12.1)	180 (13.3)	
Most or all (5-7 days)	65 (10.3)	44 (6.1)	109 (8.1)	
You had trouble keeping your mind on what you were doing				
Rarely or none (less than 1 day)	228 (36.1)	325 (45.1)	553 (40.9)	X^2= 21.9 p= .000
Some or little (1-2 days)	257 (40.7)	293 (40.6)	550 (40.7)	
Occasionally / moderate (3-4 days)	113 (17.9)	74 (10.3)	187 (13.8)	
Most or all (5-7 days)	33 (5.2)	29 (4.0)	62 (4.6)	
You felt depressed				
Rarely or none (less than 1 day)	162 (25.7)	253 (35.2)	415 (30.7)	X^2= 37.3 p= .000
Some or little (1-2 days)	290 (46.0)	333 (46.3)	623 (46.1)	
Occasionally / moderate (3-4 days)	121 (19.2)	114 (15.9)	235 (17.4)	
Most or all (5-7 days)	58 (9.2)	19 (2.6)	77 (5.7)	
You felt that everything you did was an effort				
Rarely or none (less than 1 day)	265 (42.1)	371 (51.5)	636 (47.0)	X^2= 21.5 p= .000
Some or little (1-2 days)	248 (39.4)	254 (35.3)	502 (37.1)	
Occasionally / moderate (3-4 days)	81 (12.9)	81 (11.3)	162 (12.0)	
Most or all (5-7 days)	36 (5.7)	14 (1.9)	50 (3.7)	

You felt fearful				
Rarely or none (less than 1 day)	335 (53.2)	479 (66.4)	814 (60.2)	X^2= 34.9
Some or little (1-2 days)	183 (29.0)	181 (25.1)	364 (26.9)	p= .000
Occasionally / moderate (3-4 days)	76 (12.1)	44 (6.1)	120 (8.9)	
Most or all (5-7 days)	36 (5.7)	17 (2.4)	53 (3.9)	
Your sleep was restless				
Rarely or none (less than 1 day)	154 (24.4)	298 (41.4)	452 (33.4)	X^2= 70.4
Some or little (1-2 days)	189 (30.0)	236 (32.8)	425 (31.4)	p= .000
Occasionally / moderate (3-4 days)	177 (28.1)	129 (17.9)	306 (22.6)	
Most or all (5-7 days)	111 (17.6)	57 (7.9)	168 (12.4)	
You talked less than usual				
Rarely or none (less than 1 day)	280 (44.4)	395 (54.9)	675 (49.9)	X^2=16.3
Some or little (1-2 days)	238 (37.7)	227 (31.6)	465 (34.4)	p= .001
Occasionally / moderate (3-4 days)	81 (12.8)	75 (10.4)	156 (11.5)	
Most or all (5-7 days)	32 (5.1)	22 (3.1)	54 (4.0)	
You felt lonely				
Rarely or none (less than 1 day)	201 (31.9)	308 (42.7)	509 (37.6)	X^2= 28.3
Some or little (1-2 days)	203 (32.2)	242 (33.6)	445 (32.9)	p= .000
Occasionally / moderate (3-4 days)	145 (23.0)	117 (16.2)	262 (19.4)	
Most or all (5-7 days)	81 (12.9)	54 (7.5)	135 (10.0)	
You felt sad				
Rarely or none (less than 1 day)	183 (29.0)	317 (44.0)	500 (37.0)	X^2=54.1
Some or little (1-2 days)	245 (38.8)	273 (37.9)	518 (38.3)	p= .000
Occasionally / moderate (3-4 days)	129 (20.4)	100 (13.9)	229 (16.9)	
Most or all (5-7 days)	74(11.7)	30 (4.2)	104 (7.7)	
You could not get "going"				
Rarely or none (less than 1 day)	316 (50.1)	502 (69.6)	818 (60.5)	X^2=69.5
Some or little (1-2 days)	201 (31.9)	169 (23.4)	370 (27.4)	p=.000
Occasionally / moderate (3-4 days)	77(12.2)	43 (6.0)	120 (8.9)	
Most or all (5-7 days)	37 (5.9)	7 (1.0)	44 (3.3)	
Overall CES-D sum score (μ, σ)	**21.8 (6.5)**	**19.0 (5.9)**	**20.4 (6.3)**	**F=66.3, p=.000**

Table 2.3 Rate of Depression amongst the Sample, Stratified by Recruitment Strategy

Recruitment Method / Variable	**RDS n= 404** n (%)	**CPOL n= 402** n (%)	**Venue-based n= 546** n (%)	**Overall N=1352** n (%)	**Significance** (F or X^2, p)
You were bothered by things that usually don't bother you					
Rarely or none (less than 1 day)	111 (27.5)	131 (32.6)	140 (25.7)	382 (28.3)	X^2= 9.1
Some or little (1-2 days)	204 (50.5)	170 (42.3)	271 (49.7)	645 (47.7)	p=.168
Occasionally / moderate (3-4 days)	64 (15.8)	74 (18.4)	102 (18.7)	240 (17.8)	
Most or all (5-7 days)	25 (6.2)	27 (6.7)	32 (5.9)	84 (6.2)	
You did not feel like eating, your appetite was poor					
Rarely or none (less than 1 day)	198 (49.1)	234 (58.2)	302 (55.4)	734 (54.3)	X^2= 11.5
Some or little (1-2 days)	148 (36.7)	123 (30.6)	173 (31.7)	444 (32.8)	p=.074
Occasionally / moderate (3-4 days)	45 (11.2)	39 (9.7)	49 (9.0)	133 (9.8)	
Most or all (5-7 days)	12 (3.0)	6 (1.5)	21 (3.9)	39 (2.9)	
You felt that you could not shake off the blues even with help from your family or friends					X^2= 29.7 p=.000
Rarely or none (less than 1 day)	172 (42.8)	209 (52.1)	271 (49.6)	652 (48.2)	
Some or little (1-2 days)	125 (31.1)	118 (29.4)	165 (30.2)	408 (30.2)	
Occasionally / moderate (3-4 days)	50 (12.4)	47 (11.7)	83 (15.2)	180 (13.3)	
Most or all (5-7 days)	55 (13.7)	27 (6.7)	27 (4.9)	109 (8.1)	
You had trouble keeping your mind on what you were doing					
Rarely or none (less than 1 day)	148 (36.6)	168 (41.8)	237 (43.4)	553 (40.9)	X^2= 9.8
Some or little (1-2 days)	187 (46.3)	154 (38.3)	209 (38.3)	550 (40.7)	p=.136
Occasionally / moderate (3-4 days)	48 (11.9)	63 (15.7)	76 (13.9)	187 (13.8)	
Most or all (5-7 days)	21 (5.2)	17 (4.2)	24 (4.4)	62 (4.6)	

You felt depressed					
Rarely or none (less than 1 day)	114 (28.3)	130 (32.3)	171 (31.4)	415 (30.7)	X^2= 10.4 p=.109
Some or little (1-2 days)	187 (46.4)	174 (43.3)	262 (48.1)	623 (46.1)	
Occasionally / moderate (3-4 days)	73 (18.1)	69 (17.2)	93 (17.1)	235 (17.4)	
Most or all (5-7 days)	29 (7.2)	29 (7.2)	19 (3.5)	77 (5.7)	
You felt that everything you did was an effort					
Rarely or none (less than 1 day)	157 (39.1)	204 (50.7)	275 (50.4)	636 (47.0)	X^2= 16.5 p=.011
Some or little (1-2 days)	171 (42.5)	134 (33.3)	197 (36.1)	502 (37.1)	
Occasionally / moderate (3-4 days)	56 (13.9)	48 (11.9)	58 (10.6)	162 (12.0)	
Most or all (5-7 days)	18 (4.5)	16 (4.0)	16 (2.9)	50 (3.7)	
You felt fearful					
Rarely or none (less than 1 day)	244 (60.4)	225 (56.1)	345 (63.2)	814 (60.2)	X^2= 16.9 p=.010
Some or little (1-2 days)	113 (28.0)	104 (25.9)	147 (26.9)	364 (26.9)	
Occasionally / moderate (3-4 days)	30 (7.4)	54 (13.5)	36 (6.6)	120 (8.9)	
Most or all (5-7 days)	17 (4.2)	18 (4.5)	18 (3.3)	53 (3.9)	
Your sleep was restless					
Rarely or none (less than 1 day)	112 (27.8)	124 (30.8)	216 (39.6)	452 (33.4)	X^2= 25.4 p=.000
Some or little (1-2 days)	137 (34.0)	119 (29.6)	169 (31.0)	425 (31.4)	
Occasionally / moderate (3-4 days)	90 (22.3)	102 (25.4)	114 (20.9)	306 (22.6)	
Most or all (5-7 days)	64 (15.9)	57 (14.2)	47 (8.6)	168 (12.4)	
You talked less than usual					
Rarely or none (less than 1 day)	202 (50.0)	177 (44.3)	296 (54.2)	675 (49.9)	X^2= 10.0 p=.125
Some or little (1-2 days)	137 (33.9)	155 (38.8)	173 (31.7)	465 (34.4)	
Occasionally / moderate (3-4 days)	46 (11.4)	52 (13.0)	58 (10.6)	156 (11.5)	
Most or all (5-7 days)	19 (4.7)	16 (4.0)	19 (3.5)	54 (4.0)	
You felt lonely					
Rarely or none (less than 1 day)	148 (36.7)	130 (32.3)	231 (42.3)	509 (37.6)	X^2= 19.1 p=.004
Some or little (1-2 days)	137 (34.0)	135 (33.6)	173 (31.7)	445 (32.9)	
Occasionally / moderate (3-4 days)	68 (16.9)	89 (22.1)	105 (19.2)	262 (19.4)	
Most or all (5-7 days)	50 (12.4)	48 (11.9)	37 (6.8)	135 (10.0)	
You felt sad					
Rarely or none (less than 1 day)	143 (35.5)	134 (33.3)	223 (40.8)	500 (37.0)	X^2= 10.6 p=.103
Some or little (1-2 days)	153 (38.0)	158 (39.3)	207 (37.9)	518 (38.3)	
Occasionally / moderate (3-4 days)	68 (16.9)	77 (19.2)	84 (15.4)	229 (16.9)	
Most or all (5-7 days)	39 (9.7)	33 (8.2)	32 (5.9)	104 (7.7)	

You could not get "going"					
Rarely or none (less than 1 day)	233 (57.7)	226 (56.2)	359 (65.8)	818 (60.5)	X^2= 16.7 p=.010
Some or little (1-2 days)	124 (30.7)	117 (29.1)	129 (23.6)	370 (27.4)	
Occasionally / moderate (3-4 days)	29 (7.2)	46 (11.4)	45 (8.2)	120 (8.9)	
Most or all (5-7 days)	18 (4.5)	13 (3.2)	13 (2.4)	44 (3.3)	
Overall CES-D sum score (μ, σ)	**20.9 (6.1)**	**20.6 (6.7)**	**19.7 (6.2)**	**20.4 (6.3)**	**F=5.1, p=.006**
Note: N varies based on missing responses					

Table 3.1 Description of Depressive Symptoms amongst Money Boys and MSM, Stratified by Recruitment Method

Sample Subset / Variable	RDS: MB n=200 n (%)	RDS: MSM n=204 n (%)	CPOL: MB n=203 n (%)	CPOL: MSM n=199 n (%)	Venue-based: MB n=228 n (%)	Venue-based: MSM n=318 n (%)	Overall N=1352 n (%)
Minimal Depressive Symptoms	113 (56.5)	146 (71.6)	105 (51.7)	144 (72.3)	153 (67.1)	231 (72.6)	892 (66.0)
Somewhat Elevated Depressive Symptoms	64 (32.0)	36 (17.6)	60 (29.6)	32 (16.1)	49 (21.5)	56 (17.6)	297 (22.0)
Very Elevated Depressive Symptoms	22 (11.0)	10 (4.9)	26 (12.8)	5(2.5)	15 (6.6)	17 (5.3)	95 (7.0)

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

Table 3.2 Description of Depressive Symptoms amongst the Sample, Stratified by Participant Type

Participant Type / Variable	Money boy n=631 n (%)	General MSM n=721 n (%)	Overall N=1352 n (%)	t-value, p-value
Minimal Depressive Symptoms	371 (58.8)	521 (72.2)	892 (66.0)	t=4.59, p=.000
Somewhat Elevated Depressive Symptoms	173 (42.8)	124 (17.2)	297 (22.0)	t=0.07, p=.945
Very Elevated Depressive Symptoms	63 (15.6)	32 (4.4)	95 (7.0)	t=1.03, p=.307

Table 3.3 Description of Depressive Symptoms amongst the Sample, Stratified by Recruitment Method

Recruitment Method / Variable	RDS n=404 n (%)	CPOL n=402 n (%)	Venue-based n=546 n (%)	Overall N=1352 n (%)	F-value, p-value
Minimal Depressive Symptoms	259 (64.1)	249 (61.9)	384 (70.3)	892 (66.0)	F=4.31, p=.014
Somewhat Elevated Depressive Symptoms	100 (24.8)	92 (22.9)	105 (19.2)	297 (22.0)	F=0.85, p=.429
Very Elevated Depressive Symptoms	32 (7.9)	31 (7.7)	32 (5.9)	95 (7.0)	F=3.64, p=.030

Table 4.1 Prevalence of Male-on-Male IPV amongst Chinese MSM and Money Boys, Stratified by Recruitment Method

Sample Subset / Variable	**RDS: money boys n=200** n (%)	**RDS: general MSM n=204** n (%)	**CPOL: money boys n=203** n (%)	**CPOL: general MSM n=199** n (%)	**Venue-based: money boys n=228** n (%)	**Venue-based: general MSM n=318** n (%)	**Overall N= 1352** n (%)
They threatened to stop helping you with money or housing	28 (14.2)	16 (7.8)	18 (8.9)	10 (5.1)	22 (9.1)	15 (5.0)	109 (8.1)*
Damaged or destroyed your property	35 (17.7)	20 (9.8)	15 (7.5)	8 (4.1)	33 (13.6)	34 (11.3)	145 (10.8)
Threatened to tell others about your sexuality	16 (8.1)	20 (9.8)	18 (8.9)	14 (7.1)	37 (15.2)	38 (12.6)	143 (10.6)
Verbally threatened to harm you physically or emotionally	57 (28.8)	46 (22.7)	45 (22.3)	32 (16.2)	67 (27.6)	77 (25.5)	324 (24.1)*
They hit you or threw something at you.	31 (15.7)	28 (13.7)	36 (17.8)	14 (7.1)	38 (14.4)	35 (11.6)	179 (13.3)*
Forced you to have sex when you didn't want to	14 (7.1)	9 (4.4)	35 (17.3)	16 (8.1)	14 (5.8)	11 (3.6)	99 (7.4)**
Verbally threatened to physically harm someone you care for	58 (29.3)	42 (20.7)	44 (21.8)	34 (17.2)	71 (29.2)	72 (23.8)	321 (23.8)
1 – 2 forms of abuse	77 (39.1)	69 (34.0)	59 (29.1)	51 (25.6)	93 (40.8)	94 (29.6)	443 (32.9)***
2+ forms of abuse	36 (18.3)	22 (10.8)	31 (15.3)	14 (7.1)	39 (17.1)	44 (13.8)	186 (13.8)***

Note: N varies based on missing responses

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

Table 4.2 Prevalence of Male-on-Male IPV amongst Chinese MSM and Money Boys				
Participant Type / Variable	**Money boys n=628** **n (%)**	**General MSM n=721** **n (%)**	**Overall N= 1352** **n (%)**	**Significance (X^2, p-value)**
They threatened to stop helping you with money or housing	68 (10.8)	41 (5.7)	109 (8.1)	16.2, .024
Damaged or destroyed your property	82 (13.1)	63 (8.8)	145 (10.8)	12.1 .096
Threatened to tell others about your sexuality	68 (10.8)	75 (10.4)	143 (10.6)	1.0, .960
Verbally threatened to harm you physically or emotionally	164 (26.1)	160 (22.3)	324 (24.1)	10.5 .232
They hit you or threw something at you.	101 (16.1)	78 (10.8)	179 (13.3)	16.4, .012
Forced you to have sex when you didn't want to	62 (9.9)	37 (5.1)	99 (7.3)	19.0, .002
Verbally threatened to physically harm someone you care for	169 (26.9)	152 (21.2)	321 (23.8)	14.0, .123
1 – 2 forms of abuse	229 (63.5)	214 (29.7)	443(32.9)	6.7, .000
2+ forms of abuse	106 (16.9)	80 (11.1)	186 (13.8)	9.2, .000
Note: N varies based on missing responses				

Table 4.3 Prevalence of Male-on-Male IPV, Stratified by Recruitment Method

Recruitment Method / Variable	**RDS n=402** **n (%)**	**CPOL n=400** **n (%)**	**Venue-based n=546** **n (%)**	**Overall N= 1352** **n (%)**	**Significance (X^2, p-value)**
They threatened to stop helping you with money or housing	44 (10.9)	28 (7.0)	38 (7.0)	114 (8.4)	19.9, .135
Damaged or destroyed your property	55 (13.7)	23 (5.8)	68 (12.5)	150 (11.1)	.22.8, .064
Threatened to tell others about your sexuality	37 (9.2)	32 (8.0)	76 (13.9)	149 (11.0)	.14.0, .173
Verbally threatened to harm you physically or emotionally	104 (25.9)	77 (19.3)	145 (26.6)	145 (24.4)	20.4, .201
They hit you or threw something at you.	59 (14.7)	50 (12.5)	71 (13.0)	184 (13.6)	12.3, .419
Forced you to have sex when you didn't want to	23 (5.7)	51 (12.8)	26 (4.8)	104 (7.7)	30.6, .001
Verbally threatened to physically harm someone you care for	101 (25.1)	78 (19.5)	144 (26.4)	327 (24.2)	28.8, .051
1 – 2 forms of abuse	146 (36.1)	110 (27.4)	187 (34.2)	443 (32.8)	8.0, .019
2+ forms of abuse	58 (14.4)	45 (11.2)	83 (15.2)	186 (13.8)	3.3 .191

Note: N varies based on missing responses

Table 5.1 Gender Role Belief Distribution among the Sample, Stratified by Participant Type				
Participant Type / Variable	**Overall N =1352** **N(%)**	**Money Boys n=631** **n(%)**	**General MSM n=721** **n(%)**	**Significance** **(X^2, p-value)**
A husband should have the right to discipline his wife				
False	387 (28.6)	166 (26.3)	221 (30.7)	6.6, .162
Somewhat false	231 (17.1)	102 (16.2)	129 (17.9)	
Somewhat true	351 (26.0)	170 (26.9)	181 (25.1)	
True	328 (24.3)	169 (26.8)	159 (22.1)	
Don't Know	55 (4.1)	24 (3.8)	31 (4.3)	
A man is the ruler in the home.				
False	446 (33.0)	180 (28.5)	266 (36.9)	12.8, .012
Somewhat false	228 (16.9)	114 (18.1)	114 (15.8)	
Somewhat true	250 (18.5)	122 (19.3)	128 (17.8)	
True	385 (28.5)	189 (30.0)	196 (27.2)	
Don't Know	43 (3.2)	26 (4.1)	17 (2.4)	
A man is entitled to sex with his wife whenever he wants				
False	866 (64.1)	388 (61.5)	478 (66.3)	5.0, .285
Somewhat false	264 (19.5)	136 (21.6)	128 (17.8)	
Somewhat true	105 (7.8)	54 (8.6)	51 (7.1)	
True	81 (6.0)	38 (6.0)	43 (6.0)	
Don't Know	36 (2.7)	15 (2.4)	21 (2.9)	
Some women seem to ask for beatings from their husbands				
False	339 (25.1)	165 (26.2)	174 (24.1)	7.1, .212
Somewhat false	222 (16.4)	104 (16.5)	118 (16.4)	
Somewhat true	315 (23.3)	128 (20.3)	187 (25.9)	
True	154 (11.4)	76 (12.1)	78 (10.8)	
Don't Know	319 (23.6)	156 (24.8)	163 (22.6)	
The husband has the right to hit his wife when the wife had sex with another man.				
False	527 (39.1)	213 (33.8)	314 (43.7)	17.2, .002
Somewhat false	252 (18.7)	123 (19.5)	129 (17.9)	
Somewhat true	241 (17.9)	120 (19.0)	121 (16.8)	
True	286 (21.2)	156 (24.8)	130 (18.1)	

	Don't Know	43 (3.2)	18 (2.9)	25 (3.5)	
The husband has the right to hit his wife when the wife refused to cook and keep the house clean.					
	False	1053 (78.2)	490 (77.9)	563 (78.4)	
	Somewhat false	201 (14.9)	99 (15.7)	102 (14.2)	7.2, .127
	Somewhat true	43 (3.2)	23 (3.7)	20 (2.8)	
	True	26 (1.9)	6 (1.0)	20 (2.8)	
	Don't Know	24 (1.8)	11 (1.7)	13 (1.8)	
The husband has the right to hit his wife when the wife refused to have sex with the husband.					
	False	1090 (80.7)	520 (82.5)	570 (79.1)	
	Somewhat false	187 (13.8)	81 (12.9)	106 (14.7)	4.8, .308
	Somewhat true	24 (1.8)	8 (1.3)	16 (2.2)	
	True	19 (1.4)	6 (1.0)	13 (1.8)	
	Don't Know	31 (2.3)	15 (2.4)	16 (2.2)	
The husband has the right to hit his wife when the wife told friends that the husband was sexually pathetic.					
	False	743 (55.0)	335 (53.1)	408 (56.6)	
	Somewhat false	305 (22.6)	145 (23.0)	160 (22.2)	6.0, .201
	Somewhat true	150 (11.1)	78 (12.4)	72 (10.0)	
	True	94 (7.0)	39 (6.2)	55 (7.6)	
	Don't Know	60 (4.4)	34 (5.4)	26 (3.6)	
The husband has the right to hit his wife when the wife nags the husband too much.					
	False	1039 (76.9)	487 (77.2)	552 (76.7)	
	Somewhat false	220 (16.3)	103 (16.3)	117 (16.3)	5.1, .282
	Somewhat true	44 (3.3)	15 (2.4)	29 (4.0)	
	True	20 (1.5)	9 (1.4)	11 (1.5)	
	Don't Know	28 (2.1)	17 (2.7)	11 (1.5)	
Overall sum score (μ, σ)		17.8 (5.5)	18.1 (5.3)	17.5 (5.6)	F= 4.8, .029

Note: N varies based on missing responses.

Table 5.2 Gender Role Belief Distributions among the Sample, Stratified by Recruitment Method					
Recruitment Method / Variables	**Overall N =1352 N(%)**	**RDS n=404 n(%)**	**CPOL n=402 n(%)**	**Venue-based n=546 n(%)**	**Significance (X^2, p)**
A husband should have the right to discipline his wife					
False	387 (28.6)	94 (23.3)	116 (28.9)	177 (32.4)	
Somewhat false	231 (17.1)	68 (16.8)	79 (19.7)	84 (15.4)	29.5, .000
Somewhat true	351 (26.0)	95 (23.5)	116 (28.9)	140 (25.6)	
True	328 (24.3)	128 (31.7)	82 (20.4)	118 (21.6)	
Don't Know	55 (4.1)	19 (4.7)	9 (2.2)	27 (4.9)	
A man is the ruler in the home.					
False	446 (33.0)	113 (28.0)	124 (30.8)	209 (38.3)	
Somewhat false	228 (16.9)	72 (17.8)	56 (13.9)	100 (18.3)	44.0, .000
Somewhat true	250 (18.5)	58 (14.4)	106 (26.4)	86 (15.8)	
True	385 (28.5)	147 (36.4)	105 (26.1)	133 (24.4)	
Don't Know	43 (3.2)	14 (3.5)	11 (2.7)	18 (3.3)	
A man is entitled to sex with his wife whenever he wants					
False	866 (64.1)	225 (55.7)	279 (69.4)	362 (66.3)	
Somewhat false	264 (19.5)	92 (22.8)	66 (16.4)	106 (19.4)	23.3, .003
Somewhat true	105 (7.8)	44 (10.9)	23 (5.7)	38 (7.0)	
True	81 (6.0)	28 (6.9)	22 (5.5)	31 (5.7)	
Don't Know	36 (2.7)	15 (3.7)	12 (3.0)	9 (1.6)	
Some women seem to ask for beatings from their husbands					
False	339 (25.1)	99 (24.6)	97 (24.1)	143 (26.2)	
Somewhat false	222 (16.4)	68 (16.9)	61 (15.2)	93 (17.0)	10.9, .363
Somewhat true	315 (23.3)	81 (20.1)	105 (26.1)	129 (23.6)	
True	154 (11.4)	49 (12.2)	38 (9.5)	67 (12.3)	
Don't Know	319 (23.6)	105 (26.1)	101 (25.1)	113 (20.7)	
The husband has the right to hit his wife when the wife had sex with another man.					
False	527 (39.1)	151 (37.6)	165 (41.1)	211 (38.6)	18.7, .016
Somewhat false	252 (18.7)	73 (18.3)	69 (17.2)	110 (20.1)	
Somewhat true	241 (17.9)	66 (16.4)	91 (22.7)	84 (15.4)	

True	286 (21.2)	96 (23.9)	70 (17.5)	120 (22.0)	
Don't Know	43 (3.2)	16 (4.0)	6 (1.5)	21 (3.8)	
The husband has the right to hit his wife when the wife refused to cook and keep the house clean.					
False	1053 (78.2)	287 (71.8)	335 (83.3)	431 (79.1)	27.0, .001
Somewhat false	201 (14.9)	72 (18.0)	50 (12.4)	79 (14.5)	
Somewhat true	43 (3.2)	13 (3.3)	10 (2.5)	20 (3.7)	
True	26 (1.9)	13 (3.3)	4 (1.0)	9 (1.7)	
Don't Know	24 (1.8)	15 (3.8)	3 (0.7)	6 (1.1)	
The husband has the right to hit his wife when the wife refused to have sex with the husband.					
False	1090 (80.7)	299 (74.2)	345 (85.8)	446 (81.7)	34.3, .000
Somewhat false	187 (13.8)	65 (16.1)	44 (10.9)	78 (14.3)	
Somewhat true	24 (1.8)	11 (2.7)	9 (2.2)	4 (0.7)	
True	19 (1.4)	12 (3.0)	0 (0.0)	7 (1.3)	
Don't Know	31 (2.3)	16 (4.0)	4 (1.0)	11 (2.0)	
The husband has the right to hit his wife when the wife told friends that the husband was sexually pathetic.					
False	743 (55.0)	203 (50.2)	226 (56.2)	314 (57.5)	19.0, .015
Somewhat false	305 (22.6)	98 (24.3)	90 (22.4)	117 (21.4)	
Somewhat true	150 (11.1)	46 (11.4)	56 (13.9)	48 (8.8)	
True	94 (7.0)	33 (8.2)	22 (5.5)	39 (7.1)	
Don't Know	60 (4.4)	24 (5.9)	8 (2.0)	28 (5.1)	
The husband has the right to hit his wife when the wife nags the husband too much.					
False	1039 (76.9)	293 (72.5)	331 (82.3)	415 (76.1)	19.5, .013
Somewhat false	220 (16.3)	73 (18.1)	50 (12.4)	97 (17.8)	
Somewhat true	44 (3.3)	14 (3.5)	13 (3.2)	17 (3.1)	
True	20 (1.5)	12 (3.0)	2 (0.5)	6 (1.1)	
Don't Know	28 (2.1)	12 (3.0)	6 (1.5)	10 (1.8)	
Overall sum score (μ, σ)	**19.0 (5.9)**	**17.2 (5.0)**	**17.4 (5.3)**	**17.8 (5.5)**	**F=13.7, .000**
Note: N varies based on missing responses.					

Table 6.1 Sexual Concurrency in the Last 30 Days and Lifetime, Stratified by Participant Type											
# Partners	**No partners**		**1-3 partners**		**4-6 partners**		**7-9 partners**		**10+ partner**		**X^2, p**
	MB	***MSM***	***MB***	***MSM***	***MB***	***MSM***	***MB***	***MSM***	***MB***	***MSM***	
Variable	**n (%)**										
MSM 30 days	22 (3.5)	115 (16.0)	153 (24.2)	518 (71.8)	105 (16.6)	61 (8.5)	74 (11.7)	12 (1.7)	277 (43.9)	15 (2.1)	160.8, .000
MSW 30 days	528 (84.2)	582 (81.7)	91 (14.5)	127 (17.8)	7 (1.1)	2 (.28)	1 (.16)	0	0	1 (.14)	1.4, .231
MSM lifetime	3 (.48)	3 (.42)	12 (1.9)	81 (11.3)	11 (1.7)	126 (17.5)	10 (1.6)	82 (11.4)	593 (94.3)	426 (59.3)	0.03, .871
MSW lifetime	213 (34.0)	277 (38.8)	251 (40.1)	326 (45.7)	69 (11.0)	53 (7.4)	21 (34)	17 (2.4)	72 (11.5)	40 (5.6)	3.3, .067
Partner Type	**No partners**		**Only male partners**		**Only female partners**		**Male and female partners**				**X^2, p**
	MB	***MSM***	***MB***	***MSM***	***MB***	***MSM***	***MB***		***MSM***		
Variable	**n (%)**										
MSM+MSW 30 days	17 (2.7)	98 (13.6)	516 (81.8)	494 (68.5)	5 (.79)	17 (2.4)	93 (14.7)		112(15.5)		0.17, .684
MSM+MSW lifetime	1 (.16)	4 (5.6)	212 (33.7)	274 (38.3)	3 (.48)	1 (.14)	414 (65.7)		437 (61.0)		3.2, .076

Table 6.2 Sexual Concurrency in the Last 30 Days and Lifetime, Stratified by Recruitment Method

#Partners / Variable	No partners			1-3 partners			4-6 partners			7-9 partners			10+ partner			X^2, p
	RDS	CPOL	VBS	RDS	CPOL	VBS	RDS	CPOL	VBS	RDS	CPOL	VBS	RDS	CPOL	VBS	
	n (%)															
MSM 30 days	40 (9.9)	45 (11.2)	52 (9.5)	199 (49.3)	169 (42.0)	303 (55.5)	55 (13.6)	41 (10.2)	70 (12.8)	20 (5.0)	28 (7.0)	38 (7.0)	90 (22.3)	122 (30.3)	83 (15.2)	70.7, .000
MSW 30 days	313 (77.5)	360 (89.6)	437 (80.0)	81 (20.0)	37 (9.2)	100 (18.3)	2 (.50)	4 (1.0)	3 (.55)	1 (.25)	0 (0)	0 (0)	1 (.25)	0 (0)	0 (0)	19.9, .000
MSM lifetime	3 (.74)	3 (.75)	0 (0)	34 (8.4)	20 (5.0)	39 (7.1)	34 (8.4)	38 (9.5)	65 (11.9)	10 (2.5)	44 (10.9)	38 (7.0)	323 (80.0)	297 (73.9)	404 (74.0)	4.1, .131
MSW lifetime	109 (27.0)	181 (45.1)	200 (36.6)	205 (50.7)	156 (38.8)	216 (39.6)	44 (10.9)	31 (7.7)	46 (8.4)	8 (2.0)	9 (2.2)	21 (3.8)	38 (9.4)	25 (6.22)	63 (11.54)	27.2, .000

Partner Type / Variable	No partners			Only male partners			Only female partners			Male and female partners			X^2, p
	RDS	CPOL	VBS	RDS	CPOL	VBS	RDS	CPOL	VBS	RDS	CPOL	VBS	
	n (%)												
MSM+ MSW 30 days	32 (7.9)	42 (10.4)	41 (7.5)	289 (71.5)	319 (79.4)	402 (73.6)	8 (2.0)	3 (.75)	11 (2.0)	75 (18.6)	38 (9.5)	92 (16.8)	15.0, .001
MSM+ MSW lifetime	0 (0)	4 (1.0)	1 (.18)	110 (27.2)	177 (44.1)	199 (36.4)	3 (.74)	1 (.25)	0 (0)	291 (72.0)	219 (54.5)	341 (62.5)	26.3, .000

Note: VBS= venue-based sampling

Table 7.1 Prevalence of Drug Use among the Sample, Stratified by Recruitment Method and Participant Type									
Sample Subset / Variable	**RDS: money boys** **n= 200**	**RDS: general MSM** **n= 204**	**CPOL: money boys** **n= 203**	**CPOL: general MSM** **n= 199**	**Venue-based: money boys** **n= 228**	**Venue-based: general MSM** **n= 318**	**Overall money boys** **n=631**	**Overall general MSM** **n=721**	**Overall** **N=1,352**
n (%)									
Have used drugs	50 (25.0)	19 (9.3)	54 (26.6)	13 (6.53)	66 (36.3)	66 (21.6)	170 (29.1)	98 (13.8)	268 (20.7)**
Have used ice or methamphetamine	31 (15.6)	7 (3.45)	16 (7.9)	2 (.50)	33 (14.7)	19 (6.03)	80 (12.8)	28 (3.9)	108 (8.0)**
Have used stimulants	21 (10.7)	7 (3.45)	44 (21.7)	12 (6.0)	100 (44.2)	75 (23.7)	165 (26.4)	94 (13.1)	259 (19.3)***
Have used Ecstasy	19 (9.5)	13 (6.4)	3 (1.5)	1 (.50)	8 (3.5)	6 (1.9)	30 (4.8)	20 (2.8)	50 (3.7)***
Have used drugs other than stimulants, Heroin, Ecstasy or Ice	18 (9.05)	11 (5.42)	6 (3.0)	3 (1.5)	8 (3.57)	4 (1.27)	32 (5.1)	18 (2.5)	50 (3.7)***
Mean (SD)									
Quantity of drugs used per day in the last 3 months	.06 (.38)	.04 (.56)	9.4 (18.2)	.63 (1.1)	7.9 (20.0)	3.4 (8.8)	2.8 (11.5)	.62 (3.8)	1.8 (8.9)**

Note: N varies based on missing responses *p<.05, **p<.01, ***p<.001

Table 7.2 Prevalence of Drug Use among the Sample, Stratified by Participant Type

Participant Type / Variable	**Money Boys** **n= 631**	**General MSM** **n= 721**	**Overall** **N=1,352**	**X^2 or F, p-value**
		n (%)		
Have used drugs	170 (29.0)	98 (13.8)	268 (20.7)	37.7, .000
Have used ice or methamphetamine	80 (12.8)	28 (3.9)	108 (8.0)	35.4, .000
Have used stimulants	165 (26.4)	94 (13.1)	259 (19.3)	37.4, .000
Have used Ecstasy	30 (4.8)	20 (2.8)	50 (3.7)	3.7, .054
Have used drugs other than stimulants, Heroin, Ecstasy or Ice	32 (5.1)	18 (2.5)	50 (3.7)	6.3, .012
		Mean (SD)		
Quantity of drugs used per day in the last 3 months	2.8 (11.5)	0.62 (3.8)	1.8 (8.9)	F=23.2, p=.000

Note: N varies based on missing responses *p<.05, **p<.01, ***p<.001

Table 7.3 Prevalence of Drug Use among the Sample, Stratified by Recruitment Method

Recruitment Method / Variable	**RDS** **n= 402**	**CPOL** **n= 400**	**Venue-based** **n=546**	**Overall** **N=1,352**	**X^2 or F, p-value**
			n (%)		
Have used drugs	69 (17.1)	67 (16.7)	132 (24.2)	268 (19.8)	10.9, .004
Have used ice or methamphetamine	38 (9.4)	18 (4.5)	52 (9.5)	108 (8.0)	9.6, .008
Have used stimulants	28 (6.9)	56 (13.9)	175 (32.1)	259 (19.2)	104.7, .000
Have used Ecstasy	32 (7.9)	4 (1.0)	14 (2.6)	50 (3.7)	30.4, .000
Have used drugs other than stimulants, Heroin, Ecstasy or Ice	29 (7.2)	9 (2.2)	12 (2.2)	50 (3.7)	19.6, .000
			Mean (SD)		
Quantity of drugs used per day in the last 3 months	0.05 (0.48)	8.2 (17.2)	5.7 (15.7)	1.8 (8.9)	F=34.8, p=.000

Note: N varies based on missing responses

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

Table 8.1 Correlation of Sample Demographics with Depression												
	CES-D	Age	Age at first sexual contact with men	Age at first sexual contact with women	Ethnicity	Hukou	Level of education	Monthly Income	Sexual Orientation	Marital Status	Participant Type	Recruitment Method
CES-D	-	-0.22 ***	-0.13 ***	-0.15 ***	0.07 **	0.19 ***	-0.13 ***	-0.05	0.08 **	-0.06 ***	-0.21 ***	-0.08**
Age	-	-	0.43 ***	0.58 ***	-0.07**	-0.36 ***	-0.07 **	-0.12 ***	-0.09 ***	0.45 ***	0.36 ***	0.06*
Age at first sexual contact with men	-	-	-	0.31 ***	0.03	-0.08 **	-0.03	-0.07 **	0.07*	0.22 ***	0.16***	0.08**
Age at first sexual contact with women	-	-	-	-	.002	-0.27 ***	0.03	-0.10 **	-0.19 ***	0.33 ***	0.32***	0.08*
Ethnicity	-	-	-	-	-	0.43 ***	-0.21 ***	0.05	0.11 ***	0.03	-0.22***	0.05
Hukou	-	-	-	-	-	-	-0.37 ***	0.02	0.15 ***	-0.08 **	-0.44***	-0.03
Level of education	-	-	-	-	-	-	-	0.025 ***	-0.18 ***	-.013 ***	0.31***	0.10**
Monthly Income	-	-	-	-	-	-	-	-	-0.06 *	-0.15 ***	-0.14***	0.22***
Sexual Orientation	-	-	-	-	-	-	-	-	-	0.03	-0.18***	-0.06*
Marital Status	-	-	-	-	-	-	-	-	-	-	0.15***	-0.001
Participant Type	-	-	-	-	-	-	-	-	-	-	-	0.07*
Recruitment Method	-	-	-	-	-	-	-	-	-	-	-	-
*p<.05, **p<.01, ***p<.001												

Table 8.2 Correlation of Psychosocial Variables and Drug Use with Depression

	CES-D	MSM 30 days	MSM+ MSW 30 days	IPV	Gender role beliefs	Drug use ever	Daily drug use in the last 3 months
CES-D	-	0.04	-0.01	0.16***	0.09 **	0.08**	0.06
MSM 30 days	-	-	0.004	0.06*	.049	.074**	0.15**
MSM+MSW 30 days	-	-	-	0.04	.10**	-.0004	-0.02
IPV	-	-	-	-	0.07*	0.07*	-0.02
Gender role beliefs	-	-	-	-	-	.002	-0.03
Drug use ever	-	-	-	-	-	-	0.26***
Daily drug use in the last 3 months	-	-	-	-	-	-	-

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

Table 9 Multivariate Logistic Regression Among Intersecting Health Problems Among MSM in the Shanghai Men's Study

Dependent Variable / Independent variables	Drug use ever AOR (95%CI)		MSM 30 days AOR (95%CI)		MSM +MSW 30 days AOR (95%CI)		IPV 1-2 forms of abuse AOR (95%CI)		IPV >2 forms of abuse AOR (95%CI)	
	Block 1	**Block 2**	**Block 1**	**Block 2**	**Block 1**	**Block 2**	**Block 1**	**Block 2**	**Block 1**	**Block 2**
Participant Type										
Money Boy	.82 (.43, 1.58)	.41* (.18, .96)	2.93** (1.58, 5.45)	3.49‡ (1.83, 6.64)	.67 (.34, 1.32)	.67 (.34, 1.35)	.68 (.38, 1.22)	.61 (.34, 1.12)	1.61 (.75, 3.43)	1.74 (.80, 3.78)
General MSM	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Age (years)	.96 (.91, 1.00)	.94 (.88, 1.01)	.97 (.93, 1.02)	.98 (.94, 1.02)	.97 (.92, 1.01)	.97 (.92, 1.01)	.99 (.96, 1.03)	.99 (.96, 1.03)	.97 (.92, 1.02)	.97 (.92, 1.02)
Age at first sexual contact with men (years)	1.00 (.94, 1.06)	1.00 (.92, 1.08)	.97 (.92, 1.02)	.96 (.91, 1.01)	1.03 (.98, 1.08)	1.03 (.98, 1.08)	.98 (.94, 1.02)	.98 (.94, 1.02)	1.05 (.99, 1.11)	1.05 (.99, 1.11)
Age at first sexual contact with women (years)	.90** (.84, .98)	.93 (.84, 1.03)	1.02 (.95, 1.09)	1.02 (.95, 1.10)	.93 (.86, 1.00)	.92* (.85, .99)	1.00 (.94, 1.07)	1.01 (.94, 1.07)	1.00 (.92, 1.08)	1.00 (.92, 1.08)
Ethnicity										
Han	1.03 (.32, 3.30)	3.78 (.40, 36.22)	.41 (.14, 1.22)	.44 (.14, 1.35)	.40 (.13, 1.22)	.42 (.13, 1.33)	.34* (.12, .97)	.34* (.12, .98)	.89 (.25, 2.97)	.87 (.24, 3.11)
Other	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Hukou										
Shanghai	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Other	1.33 (.53, 3.39)	1.17 (.36, 3.80)	.99 (.40, 2.50)	.95 (.37, 2.43)	1.15 (.45, 2.96)	1.10 (.42, 2.86)	.80 (.38, 1.68)	.81 (.38, 1.72)	1.03 (.36, 2.90)	1.08 (.38, 3.07)
Level of Education										

1. Illiterate	2.61 (.27, 25.83)	2.79 (.10, 76.50)	6.40 (.77, 52.37)	7.10 (.89, 56.64)	1.19 (.10, 14.66)	1.43 (.11, 18.11)	.54 (.08, 3.74)	.46 (.07, 3.20)	(.000,.000)	(.000,.000)
2. Elementary	2.23 (.49, 10.14)	4.45 (.59, 33.56)	2.98 (.78, 11.35)	3.11 (.77, 12.60)	2.37 (.46, 12.10)	2.30 (.42, 12.44)	.16* (.03, .82)	.13* (.02, .73)	4.96* (1.17, 20.93)	4.98* (1.13, 21.95)
3. Middle School	1.43 (.65, 3.16)	1.83 (.57, 5.91)	1.29 (.60, 2.76)	1.11 (.51, 2.42)	3.15* (1.20, 8.25)	3.18* (1.20, 8.40)	.39** (.19, .78)	.38** (.18, .77)	1.21 (.48, 3.05)	1.21 (.47, 3.12)
4. High School or equivalent	3.11** (1.46, 6.64)	4.92** (1.60, 15.19)	2.08* (1.02, 4.25)	1.95 (.92, 4.11)	3.41** (1.36, 8.56)	3.73** (1.45, 9.60)	.84 (.45, 1.56)	.83 (.44, 1.60)	1.40 (.59, 3.36)	1.41 (.58, 3.46)
5. College or more	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Monthly Income (Yuan)										
<1000	.08** (.01, .44)	.07* (.01, .72)	1.41 (.36, 5.50)	1.37 (.33, 5.81)	.46 (.10, 2.09)	.40 (.08, 1.89)	1.10 (.35, 3.47)	.93 (.28, 3.07)	1.02 (.23, 4.41)	.86 (.19, 3.92)
1000-2999	.13‡ (.06, .26)	.11‡ (.04, .28)	1.91 (.98, 3.74)	1.92 (.92, 4.00)	.74 (.36, 1.52)	.65 (.29, 1.42)	.94 (.50, 1.76)	.82 (.41, 1.63)	.72 (.34, 1.51)	.62 (.27, 1.39)
3000-4999	.41* (.20, .82)	.23** (.09, .63)	1.81 (.90, 3.61)	1.96 (.94, 4.07)	.80 (.37, 1.71)	.76 (.34, 1.69)	.94 (.48, 1.81)	.87 (.44, 1.74)	.53 (.24, 1.19)	.46 (.20, 1.06)
≥5000	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Sexual Orientation										
Openly gay or bisexual	1.44 (.46, 4.45)	.84 (.15, 4.56)	1.12 (.39, 3.24)	1.17 (.38, 3.60)	2.35 (.77, 7.16)	2.46 (.78, 7.75)	.68 (.32, 1.42)	.62 (.29, 1.31)	.29** (.13, .64)	.28** (.12, .63)
Closeted gay or bisexual	.70 (.3, 1.64)	.86 (.24, 3.10)	.98 (.44, 2.16)	.99 (.43, 2.28)	1.55 (.37, 6.54)	1.84 (.42, 8.10)	1.32 (.49, 3.58)	1.12 (.40, 3.12)	.23 * (.07, .77)	.23* (.08, .77)
Heterosexual	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Marital Status										

Currently Married or divorced	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Never Married or living together	1.41 (.65, 3.04)	1.16 (.43, 3.10)	1.37 (.68, 2.75)	1.79 (.86, 3.74)	.33** (.16, .66)	.33** (.16, .68)	.87 (.47, 1.62)	.89 (.47, 1.67)	.94 (.41, 2.15)	.95 (.40, 2.21)
Model r^2 (Nagelkerke)	**.344**	**.691**	**.205**	**.266**	**.127**	**.136**	**.097**	**.121**	**.110**	**.125**
Psychosocial health problems	**Block 1**	**Block 2**	**Block 1**	**Block 2**	**Block 1**	**Block 2**	**Block 1**	**Block 2**	**Block 1**	**Block 2**
CES-D	-	0.99 (.93, 1.05)	-	1.00 (.96, 1.04)	-	.98 (.93, 1.02)	-	1.04 (1.00 1.08)	-	1.01 (.97, 1.06)
Drug use ever	-	-	-	.85 (.64, 1.13)	-	.90 (.65, 1.24)	-	.77 (.58, 1.03)	-	1.04 (.75, 1.46)
Daily Drug Use in the last 3 Months	-	(.000, .)	-	.99 (.96, 1.01)	-	1.00 (.98, 1.03)	-	1.01 (.98, 1.04)	-	.99 (.95, 1.02)
MSM 30 days	-	0.61 (.08, 4.39)	-	-	-	1.00 (.96, 1.05)	-	1.02 (.98, 1.06)	-	.96 (.90, 1.03)
MSM+MSW 30 days	-	1.06 (.38, 2.94)	-	1.63** (1.23, 2.20)	-	-	-	1.02 (.78, 1.32)	-	.95 (.68, 1.33)
IPV Total	-	1.04 (.82, 1.31)	-	1.07 (.91, 1.25)	-	1.02 (.85, 1.21)	-	-	-	-
Gender role beliefs	-	.98 (.92, 1.04)	-	.99 (.95, 1.04)	-	1.02 (.98,1.07)	-	.99 (.95, 1.03)	-	1.02 (.98, 1.08)
Model r^2 (Nagelkerke)	**-**	**.691**	**-**	**.266**	**-**	**.136**	**-**	**.121**	**-**	**.125**
*p<.05, **p<.01, p<.001										

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Appendices

Appendix A: Participant Survey

SHANGHAI MEN'S STUDY (SMS)

TODAY'S DATE: _____/_____/____

NAME OF INTERVIEWER: _____

STUDY PARTICIPANT ID:
_____

TYPE OF STUDY PARTICIPANT: (1) Full-time MB (2) Part-time MB; (3) General MSM

GENERAL INSTRUCTIONS

This anonymous survey should take you roughly 30 to 45 minutes to complete. You will be answering a number of personal questions, but all of your responses will be kept private. None of the information you provide will be shared with anyone such as government agencies or family members. The study will not identify you an as individual; we will only use aggregated responses for our analyses and report.

There are a total of (4) major sections. Please read each item carefully and mark the response the best reflects your behavior or feeling. There are no correct or wrong answers. Some of the items may appear to be repetitive, please answer them as honestly and as accurately as you can. **In Section III, how you answer an item may require you to skip all or some of all subsequent questions**. For this reason, we again ask that you read each item very carefully before answering.

If you have questions, please do not hesitate to ask the attending staff for clarification.

DO NOT WRITE YOUR NAME ON THE QUESTIONNAIRE

SECTION I

1. Basic information

Instructions: We would like you to tell us about yourself. Please read each question carefully, then FILL IN THE BLANK OR CIRCLE THE ANSWER or CHECK THE BOX of the response that you believe is most accurate.

1.1. Birth place: _____City; _____ Province

1.2. Birth date: _____ Year ____ Month (please mark if you use traditional Chinese calendar)

1.3. Present "Hukou": (1) Shanghai (2) Other areas_____(please specify province)

1.4. Ethnic: (1) Han (2) Other (please specify): _____

1.5. Occupation (can make multiple choices): (1) Student (2) White-collar (3) Worker (4) Government (5) Free lance (6) Sex Worker (7) Other, _____

1.6. Education level: (1) Illiterate (Cannot read) (2) Elementary (3) Middle school (4) High school or equal (5) College or above

1.7. Marital status: (1) Never married (2) Married with spouse (3) Divorced (4) Widowed (5) Cohabiting with a significant other

1.8. Monthly income

(1) less than 1000 Yuan

(2) Y1000 – Y2999.99

(3) Y3000 – Y4999.99

(4) Y5000 and more

1.9. Have you ever had any form of sexual or intimate contact with *another man* in your life? This can include mutual masturbation, dry humping, oral sex, and anal sex.

(1) Yes

(2) No

1.10. How old were you when you had the first sexual or intimate contact with that man?

_____years old

1.11. Have ever had any form of sexual or intimate contact with *a woman* in your life?

(1) Yes

(2) No

1.12. How old were you when you had the first sexual or intimate contact with that woman?

_____years old

1.13. How old were you when you *first realized* you were attracted to men?

_____years old

1.14. What is your sexual orientation?

(1) Openly Gay (Tongzhi)

(2) Closeted Gay (I am not open about my homosexuality)

(3) Openly Bisexual

(4) Closeted Bisexual (I am not open about my bisexuality)

(5) Heterosexual

(6) Other (Please specify): _____

2. Social Support: Now we would like to learn the social support that you have.

1.2a. How many close friends do you have from whom you can obtain support and help? (Only one choice)

(1) none

(2) 1-2

(3) 3-5

(4) 6 or more

1.2.b. During the past year, you: (only one choice)

(1) were separated from family members and stay alone

(2) changed living place very often and were mostly living with a stranger

(3) lived with classmates, colleagues or friends

(4) lived with family members

1.2.c. You and your neighbors: (only one choice)

(1) never take care of each other

(2) may provide somewhat care during difficulties

(3) some neighbors very much care you

(4) most neighbors very much care you

1.2.d. You and your colleagues: (only one choice)

(1) never take care of each other

(2) may provide somewhat care during difficulties

(3) some colleagues very much care you

(4) most colleagues very much care you

1.2. Support and care from family members: (please check "√" at the most appropriate items) (only one choice) (If you don't have a child, please leave it blank at 1.2.g)

	⊖ no	⊜ rarely	⊛ fairly	④ fully
1.2.e. spouse (or lover)				
1.2.f. parents				
1.2.g. children				
1.2.h. brothers or sisters				
1.2.i. other family members				

1.2.i1. In the past when you were under difficult or urgent situations, you had obtained economical or other substantial support or help from:

(0) no one

(1) the following people: (can make multiple choices)

A. spouse; B. other family members; C. friends; D. relatives; E. colleagues; F. employers; G. such official and semi-official sectors as party or labor union

1.2.j. In the past when you were under difficult or urgent situations, you had obtained psychiatric or psychological care from:

(0) no one

(1) the following people: (can make multiple choices)

A. spouse; B. other family members; C. friends; D. relatives; E. colleagues; F. employers; G. such official and semi-official sectors as party or labor union

1.2.k. When you are frustrated or troubled with, how would you talk about? (only one choice)

(1) Not tell anyone else

(2) Only tell 1 or 2 closest persons

(3) Tell friends if they ask

(4) Always tell others to obtain support and understandings

1.2.l. When you are frustrated or troubled with, how would you seek help? (only one choice)

(1) Not accept any help

(2) Rarely ask for help

(3) Sometime ask for help

(4) Always ask for help from family, relatives or organizations

1.2.m. Regarding organizational activities (such as party's, religious, labor union, student unions), you would: (only one choice)

(1) never participate

(2) rarely participate

(3) often participate

(4) always actively participate

SECTION II

Instructions: In this section, there are 4 sets of statements or questions. Please read each question carefully, then MARK THE ANSWER OR CIRCLE THE ANSWER or CHECK THE BOX of the response that you believe is most accurate. There are no right or wrong answers.

Set 1: For each of the following statements, mark the response that best indicates your experience as a gay or bisexual (LGB) person.

	Strongly Disagree	*Moderately Disagree*	*Mildly Disagree*	*Neither Agree or Disagree*	*Mildly Agree*	*Moderately Agree*	*Strongly Agree*
2.1.a. . I prefer to keep my same-sex romantic relationships rather private.							
2.1.b. I will never be able to accept my sexual orientation until all of the people in my life have accepted me.							
2.1.c. Coming out to my friends and family has been a very lengthy process.							
2.1.d. I'm not totally sure what my sexual orientation is.							
2.1.e. I keep careful control over who knows about my same-sex romantic relationships.							
2.1.f. I often wonder whether others judge me for my sexual orientation.							
2.1.g. I am glad to be an LGB person.							
2.1.h. I look down on heterosexuals.							
2.1.i. My private							

sexual behavior is nobody's business							
2.1.j. I can't feel comfortable knowing that others judge me negatively for my sexual orientation.							
2.1.k. Homosexual lifestyles are not as fulfilling as heterosexual lifestyles.							
2.1.l. Admitting to myself that I'm an LGB person has been a very painful process							
2.1.m. If you are not careful about who you come out to, you can get very hurt.							
2.1.n. I'm proud to be part of the LGB community.							
2.1.o. Developing as an LGB person has been a fairly natural process for me.							
2.1.p. I think a lot about how my sexual orientation affects the way people see me.							
2.1.q. I wish I were heterosexual.							
2.1.r. I have felt comfortable with my sexual identity just about from the start.							
2.1 s. I would rather be straight if I could.							
2.1 t. I keep changing my mind about my sexual orientation.							
2.1 u. Being an LGB person makes me feel insecure around straight people.							
2.1 v. I can't decide							

whether I am bisexual or homosexual.							
2.1 w. I think very carefully before coming out to someone.							
2.1 x. Admitting to myself that I'm an LGB person has been a very slow process.							
2.1 y. Straight people have boring lives compared with LGB people.							
2.1 z. My sexual orientation is a very personal and private matter.							
2.1 aa. I get very confused when I try to figure out my sexual orientation.							

Set 2: Listed below are several statements that reflect different attitudes about sex. For each statement fill in the response on the answer sheet that indicates how much you agree or disagree with that statement. Some of the items refer to a specific sexual relationship, while others refer to general attitudes and beliefs about sex. Whenever possible, answer the questions with your current partner in mind. If you are not currently dating anyone, answer the questions with your most recent partner in mind. If you have never had a sexual relationship, answer in terms of what you think your responses would most likely be.

(Permissiveness)

	Strongly Disagree	*Moderately Disagree*	*Mildly Disagree*	*Neither Agree or Disagree*	*Mildly Agree*	*Moderately Agree*	*Strongly Agree*
2.2.a. I do not need to be committed to a person to have sex with him/her.							
2.2.b. Casual sex is acceptable.							
2.2.c. I would like to							

have sex with many partners.							
2.2.d. One-night stands are sometimes very enjoyable.							
2.2.e. It is okay to have ongoing sexual relationships with more than one person at a time.							
2.2.f. Sex as a simple exchange of favors is okay if both people agree to it.							
2.2.g. The best sex is with no strings attached.							
2.2.h. Life would have fewer problems if people could have sex more freely.							
2.2.i. It is possible to enjoy sex with a person and not like that person very much.							
2.2.j. It is okay for sex to be just good physical release.							

(Birth Control)

	Strongly Disagree	*Moderately Disagree*	*Mildly Disagree*	*Neither Agree or Disagree*	*Mildly Agree*	*Moderately Agree*	*Strongly Agree*
2.2.k. Birth control is part of responsible sexuality. .							
2.2.l. A woman should share responsibility for birth control.							
2.2.m. A man should share responsibility for birth control.							

(Communion)

	Strongly Disagree	*Moderately Disagree*	*Mildly Disagree*	*Neither Agree or Disagree*	*Mildly Agree*	*Moderately Agree*	*Strongly Agree*
2.2.n. Sex is the closest form of communication between two people.							
2.2.o. A sexual encounter between two people deeply in love is the ultimate human interaction.							
2.2.p. At its best, sex seems to be the merging of two souls.							
2.2.q. Sex is a very important part of life.							
2.2.r. Sex is usually an intensive, almost overwhelming experience.							

(Instrumentality)

	Strongly Disagree	*Moderately Disagree*	*Mildly Disagree*	*Neither Agree or Disagree*	*Mildly Agree*	*Moderately Agree*	*Strongly Agree*
2.2.s. Sex is best when you let yourself go and focus on your own pleasure.							
2.2.t. Sex is primarily the taking of pleasure from another person.							
2.2.u. The main purpose of sex is to enjoy oneself.							
2.2.v. Sex is primarily physical.							
2.2.w. Sex is primarily a bodily function, like eating.							

Set 3: Please indicate how true or false these statements are

(Gender Role Scale)

	False	*Somewhat False*	*Somewhat True*	*True*	*Don't Know*
2.3.a. A wife should move out of the house if her husband hits her.					
2.3.b. A man is never justified in hitting his wife.					
2.3.c. A husband should have the right to discipline his wife.					
2.3.d. A man is the ruler in the home.					
2.3.e. A man should be arrested if he hits his wife.					
2.3.f. A man is entitled to sex with his wife whenever he wants.					
2.3.g. Wife beating is grounds for divorce.					
2.3.h. Some women seem to ask for beatings from their husbands.					
2.3.i. The husband has the right to hit his wife when the wife had sex with another man.					
2.3.j. The husband has the right to hit his wife when the wife refused to cook and keep the house clean.					
2.3.k. The husband has the right to hit his wife when the wife refused to have sex with the husband.					
2.3.l. The husband has the right to hit his wife when the wife told friends that the husband was sexually pathetic.					
2.3.m. The husband has the right to hit his wife when the wife nags the husband too much.					

Set 4: Fill out the following chart as descriptive of your recent feelings or behaviors.

(CES-D-Short form)

During the past week, how often you have felt:	*Rarely or none (less than 1 day) of the time (less than 1 day in past week)*	*Some or little (1-2 days) of the time (1-2 days in past week)*	*Occasionally or a moderate amount of time (3-4 days in the past week)*	*Most or all of the time (5-7 days in the past week)*

2.4.a. You were bothered by things that usually don't bother you				
2.4.b. You did not feel like eating, your appetite was poor				
2.4.c. You felt that you could not shake off the blues even with help from your family or friends				
2.4.d. You had trouble keeping your mind on what you were doing				
2.4.e. You felt depressed				
2.4.f. You felt that everything you did was an effort				
2.4.g. You felt fearful				
2.4.h. Your sleep was restless				
2.4.i. You talked less than usual				
2.4.j. You felt lonely				
2.4.k. You felt sad				
2.4.l. You could not get "going"				

SECTION III

YOU HAVE COMPLETED HALF OF THE SURVEY. THE FOLLOWING SECTION IS EVEN LONGER THAN THE OTHERS, SO IF YOU'D LIKE TO TAKE A FIVE-MINUTE BREAK, PLEASE DO SO.

Instructions: This section has five major parts: (1) statements regarding your attitudes about health issues, (2) health status and well-being, (3) testing and treatment of sexually transmitted diseases, (4) sexual behaviors, and (5) substance use.

Section III.1: Attitudes about Health Issues

		True	False	Not sure
3.1.a	It is easy to get HIV through mosquito bites because of the contact with blood.			
3.1.b	The *window period* refers to the time between infection and the detection of antibodies in the blood.			
3.1.c	Once a person has tested positive for HIV, it is certain that they will develop AIDS in their lifetime.			
3.1.d	Confidential testing means that you do not have to give your name when you get tested.			
3.1.e	Using latex condoms while having sex reduces the risk of transmitting HIV.			
3.1.f	You cannot get HIV if you are having sex with only one partner.			
3.1.g	Oil-based lubricants should be used with latex condoms to prevent HIV.			
3.1.h	AIDS is now curable.			

Intimate relationships can have many different feelings and behaviors. Sometimes relationships involve unwanted physical or emotional violence. In the past 5 years, how many different **boyfriends** or **partners** did the following things to you? If no one ever did these to you, enter "0".		
3.1.i	They hit you or threw something at you.	_ _ boyfriends
3.1.j	Threatened to stop helping you with money or with housing.	_ _ boyfriends
3.1.k	Verbally threatened to harm you physically or emotionally?	_ _ boyfriends
3.1.l	Verbally threatened to physically harm someone you care for?	_ _ boyfriends
3.1.m	Forced you to have sex when you didn't want to?	_ _ boyfriends
3.1.n	Damaged or destroyed your property?	_ _ boyfriends
3.1.o	Threatened to tell others about your sexuality?	_ _ boyfriends

Section III.2: Health Status and Well-being (Watch out for skip patterns in this section)

3.2.a	Have you ever tested for HIV in your life? (1) yes, _____times **(skip to 3.2.c)** (2) never
3.2.b	We would like to learn about your reasons for never having been tested for HIV. Is the following a reason you have never tested? **(multiple choices)**
(1)	I have not had the time to get tested.
(2)	I don't like needles.
(3)	I am not worried about getting HIV.
(4)	I have not had risky sex.
(5)	I have only one sex partner.
(6)	I am afraid that the result might be positive.
(7)	I am afraid my family or friends will find out the results.
(8)	The government might find out the results.
(9)	I don't want to be seen going to the places where they do the testing.
(10)	I don't know where to go to get tested.
(11)	I didn't know that I should get tested for HIV.
(12)	The testing hours are not convenient.
(13)	I can't afford to get tested.
(14)	Other reasons, _____(please specify)

(Please skip to 3.2.i, after complete the above questions)

3.2.c When was your last HIV test?

_____year_____month

3.2.d	Where did you get your last HIV test?
(1)	Hospital (including community hospitals or community health service centers)
(2)	Private doctor/clinic
(3)	Center for Disease Prevention and Control (CDC)
(4)	Some other place, _____
(5)	Don't Know

3.2.e	Why did you decide to get tested for HIV? Please circle all that apply.
(1)	I started having sex with a new partner
(2)	I had unprotected sex (oral, anal or virginal sex)
(3)	I was asked by my partner or boyfriend
(4)	I have/had an HIV-positive sex partner
(5)	I was asked by the health department
(6)	The test was part of a research study
(7)	My doctor recommended it
(8)	I was afraid I got HIV

(9)	It was an employment or military service requirement
(10)	I had used shared needles or syringes
(11)	It was a medical/surgical requirement
(12)	It was part of a blood or plasma donation or transfusion
(13)	Other reasons

3.2.f What was the result of the last HIV testing?
(1) Positive (2) negative **(skip to 3.2.L)** (3) don't know (4) refuse to answer

3.2.g	How do you think you became HIV positive?
(1)	From the person who is my **main** partner now (boyfriend, partner, lover).
(2)	From a past **main** partner.
(3)	From someone else I had sex with while I was in a main relationship.
(4)	From a past sexual encounter from someone I wasn't dating or involved with (like a trick, fuck buddy, casual encounter, or one night stand).
(5)	From another source (such as a blood transfusion, tattoo, shared drug needles, etc.)
(6)	Don't Know / Not Sure

3.2.h	Are you seeing a doctor or other health care provider for your HIV now?
(1)	No
(2)	Yes

3.2.i	Are you taking any medication to fight the HIV virus now? These are called "HAART", "Antiretrovirals", or "anti HIV medications".
(1)	No
(2)	Yes

3.2.j	Have you ever been diagnosed with AIDS (with a CD4 count less than 200 or with an AIDS-defining illness)?
(1)	No (skip to 3.2.l)
(2)	Yes

3.2.k	When were you first told you had AIDS?

_ _ __/ ___ _ /__ _ _ _ _ Month / Day / Year

3.2.l	What do you think your HIV status is now? (for those who never tested positive for HIV
(1)	Positive
(2)	Negative
(3)	Don't Know / Not Sure

3.2.m	How likely are you to become infected with HIV in the future?
(1)	Very unlikely
(2)	Somewhat unlikely
(3)	Somewhat likely
(4)	Very Likely
(5)	Don't Know / Not Sure

3.2.n. Do you think HIV testing is free?
(1) Yes, it is always free
(2) No, it always costs money
(3) It is only free in certain institutions or circumstances
(4) Don't Know

3.2.o. Where can you get HIV testing (check all if applicable)
(1) hospitals (including community hospitals or community health service centers)
(2) private clinics
(3) centers for disease prevention and control (CDC)
(4) Don't Know

Section III.3. Testing and Treatment for STD

3.3.a. Have you ever been tested for herpes simplex virus type 2?
(1) Yes
(2) No **(Skip to Question 3.3.f)**

3.3.b. What was the result?
(1) Negative **(Skip to Question 3.3.f)**
(2) Positive
(3) Don't Know

3.3.c. What type of health provider diagnosed that you were infected with herpes simplex virus 2 (multiple choices)
(1) hospitals (including community hospitals or community health service centers)
(2) private clinics
(3) centers for disease prevention and control (CDC)
(4) Some other place

3.3.d. Have you ever been treated for herpes simplex 2?
(1) Yes
(2) No

3.3.e. Are you cured of herpes simplex 2?
(1) Yes
(2) No
(3) Don't Know

3.3.f Have you ever been tested for gonorrhea?
(1) Yes
(2) No **(Skip to Question 3.3.k)**

3.3.g. What was the result?
(1) Negative **(Skip to Question 3.3.k)**
(2) Positive
(3) Don't Know

3.3.h. What type of health provider diagnosed that you were infected with gonorrhea (multiple choices)

(1) hospitals (including community hospitals or community health service centers)
(2) private clinics
(3) centers for disease prevention and control (CDC)
(4) Some other place

3.3.i. Have you ever been treated for gonorrhea?
(1) Yes
(2) No

3.3.j. Are you cured of gonorrhea?
(1) Yes
(2) No
(3) Don't Know

3.3.k Have you ever been tested for syphilis?
(1) Yes
(2) No **(Skip to Question 3.3.p)**

3.3.l. What was the result?
(1) Negative **(Skip to Question 3.3.p)**
(2) Positive
(3) Don't Know

3.3.m. What type of health provider diagnosed that you were infected with syphilis (multiple choices)
(1) hospitals (including community hospitals or community health service centers)
(2) private clinics
(3) centers for disease prevention and control (CDC)
(4) Some other place

3.3.n. Have you ever been treated for syphilis?
(1) Yes
(2) No

3.3.o. Are you cured of syphilis?
(1) Yes
(2) No
(3) Don't Know

3.3.p. Have you ever been diagnosed with any other STDs (e.g., condylomata acuminate)?
(1) Yes
(2) No **(Skip to Question 3.3.t)**

3.3.q. What type of health provider diagnosed that you had other STDs (e.g., condylomata acuminate)? (multiple choices)
(1) hospitals (including community hospitals or community health service centers)
(2) private clinics
(3) centers for disease prevention and control (CDC)
(4) Some other place

3.3.r. Have you ever been treated for such STDs?

(1) Yes
(2) No

3.3.s. Are you cured of such STDs?
(1) Yes
(2) No
(3) Don't Know

3.3.t. Do you think STI testing is free?
(1) Yes, it is always free
(2) No, it always costs money
(3) It is only free in certain institutions or circumstances
(4) Don't Know

3.3.u. Where can you get STI testing? (check all if applicable)
(1) hospitals (including community hospitals or community health service centers)
(2) private clinics
(3) centers for disease prevention and control (CDC)
(4) Some other place

3.3.v. Can you get free annual physical examination?
(1) Yes, once/_ _ year(s)
(2) No

Section III.4: Sexual Behaviors (Watch out for skip patterns in this section)

3.4.a. Have you ever had unprotected sex with a man (i.e., sex without use of a condom)?
(1) Yes
(2) No

3.4.b. Have you ever had unprotected sex with a woman (i.e., sex without use of a condom)?
(1) Yes
(2) No

3.4.c. Have you had a main partner?
(1) Yes
(2) No

	None	*1 to 3*	*4 to 6*	*7 to 9*	*10 or more(Please provide exact number of sex partners per males and females)*
3.4.d. In the past 30 days, how many male sexual partners did you have?					
3.4.e. In the past 12 months, how many male sexual partners did you have?					

3.4.f. In your lifetime, approximately how many male sexual partners have you had?					
3.4.g. In the past 30 days, how many female sexual partners did you have?					
3.4.h. In the past 12 months, how many female sexual partners did you have?					
3.4.i. In your lifetime, approximately how many female sexual partners have you had?					

Instruction: Fill out following table as accurately as possible.

	Ever		Last Year		Last 6 months	
	Yes	No	Yes	No	Yes	No
3.4.j. Have you had sex with a main partner (e.g. lover)?						
3.4.k. Have you had *unprotected* sex with a main sex partner (e.g. lover)?						
3.4.l. Have you had sex with a prostitute (male or female)?						
3.4.m. Have you had *unprotected* sex (no condoms) with a prostitute (male or female)?						
3.4.n. Have you ever had oral sex?						
3.4.o. Have you had oral sex without using a condom?						
3.4.p. Have you had anal sex?						
3.4.q. Have you had anal sex without using a condom?						
3.4.r. Have you had insertive anal sex?						
3.4.s. Have you had receptive anal sex?						
3.4.t. Have you had sex with casual partners (male or female) other than a main partner or a prostitute?						
3.4.u. Have you had unprotected sex (no condoms) with a casual partner (male or female)?						
3.4.v. Have you had sex after drink alcohol?						
3.4.w. Have you had sex without a condom because you were under the influence of alcohol?						
3.4.x. Have you had sex after using drugs?						
3.4.y. Have you had sex without a condom because you were under the influence of drugs?						

Section III.5: Substance Use/Abuse (Watch out for skip patterns in this section)

Instruction: Please fill out the following table as accurate as possible.

	No	*Don't Know/Don't Remember*	*In past week*	*In past 3 Months*
3.5.a. Have you ever used cigarettes/tobacco?			About ___ cigarettes/tobacco	About ___ cigarettes/tobacco product per day on average
3.5.b. Did you ever drink beer?			About ___ bottle/can	About ___bottle per day on average
3.5.c. Did you ever drink yellow wine or rice wine?			About ___ bottle	About ___bottle per day on average
3.5.d. Did you ever drink Chinese white wine?			About ___ bottle	About ___bottle per day on average
3.5.e. Did you ever drink Western white wine			About ___ bottle	About ___bottle per day on average
3.5.f. Did you ever drink red wine (made of grape)?			About ___ bottle	About ___bottle per day on average
3.5.g. Did you ever drink alcohol (such as brandy, whisky, vodka) other than beer, Chinese white wine, Western white wine or Western red wine?			About ___ bottle	About ___bottle per day on average
3.5.h. Have you ever used drugs (including Ecstasy, white powder or heroin, marijuana, opium, ice toxic, methamphetamine, K powder or cocaine, tranquilizer, stimulants (popper), etc?			About ____ times per day on average	About ____ times per day on average
3.5.i. Have you ever used stimulants (popper)?			About ___ times per day on average	About ____ times per day on average
3.5.j. Have you ever used Ecstasy?			About ___ times per day on average	About ____ times per day on average
3.5.k. Have you ever used Heroin (white powder)?			About ____ times per day on average	About ____ times per day on average
3.5.l. Have you ever used ice toxic or methamphetamine?			About ____ pills per day on average	About ____ times per day on average
3.5.m. Have you ever used any drug other than stimulant, Heroin, Ecstasy, or Ice?			About ___times per day on average	About ____ times per day on average

If you have ever had alcohol, please answer the following questions, **if you have never had alcohol, please skip to question 3.5.r.**

3.5.n. Have you ever felt the need to cut down on your **drinking**?	Yes	No
3.5.o. Have you ever been annoyed by others criticizing your **drinking**?	Yes	No
3.5.p. Have you ever felt guilty about your **drinking**?	Yes	No
3.5.q. Do you ever need an eye-opener in the morning?	Yes	No

If you had ever used drug, please answer the following questions. **If you have never tried drugs, please skip to the next section.**

3.5.r. Have you ever felt the need to cut down on your **drug use**?	Yes	No
3.5.s. Have you ever been annoyed by others criticizing your **drug use**?	Yes	No
3.5.t. Have you ever felt guilty about your **drug use**?	Yes	No
3.5.u. Do you ever need an eye-opener in the morning?	Yes	No
3.5.v. Have you ever had group drug use?	Yes	No
3.5.w. (only ask MB for this question) Have any clients provided you with free drugs?	Yes	No

SECTION IV: TRIPARITE MODEL

(Only applied to migrants)

4.1. My "hukou" is _____.

(1) urban

(2) rural

(3) non-registered

(4) don't know

4.2. You first left your hometown in _____ (e.g., 1998)

4.3. You were _____ before you first left your home town

(1) a student

(2) working (including own business)

(3) looking for a job

4.4. You left your hometown ____ (check all if applicable)

(1) to earn money

(2) because there is no freedom at home

(3) because there is nothing to do at home

(4) because you wanted to see the world

(5) Other (please describe): _____

4.5. After you left hometown, you traveled to ____ cities (only give number – e.g., 0 for none) before you came to Shanghai?

4.6. How long have you spent for moving around in different cities before coming to Shanghai?

_____years

4.7. How long have you been in Shanghai?

(1) less than 3 months

(2) 3-6 months

(3) 7-12 months

(4) 1-3 years

(5) more than 3 years

4.8. Did you think you were able to find a job in Shanghai before you came to Shanghai?

(1) yes, you were

(2) no, you were not

4.9. Who are you staying with in Shanghai?

(1) yourself

(2) with friends or colleagues (no love relationship)

(3) with spouse, fiancée, or lover

(4) with relatives (e.g. parents, off spring, brothers, etc.)

4.10. In general, are you satisfied with your experience in Shanghai?

(1) satisfied

(2) not satisfied

4.11. In general, you think Shanghai is a ____ city to live in.

(1) highly stressful

(2) moderately stressful

(3) pleasant

4.12. When you are not working, you hang out or socialize with your ____ (choose all if applicable).

(1) boss

(2) relatives

(3) people from same hometown

(4) fellow workers

(5) friends

(6) acquaintances in Shanghai

(7) family

4.13. When you have financial needs, you can borrow some money from ____ (choose all if applicable).

(1) boss

(2) relatives

(3) people from the same hometown

(4) fellow workers

(5) friends

(6) acquaintances in Shanghai

(7) family

4.14. Since leaving your hometown, how many times have you visited there?

(1) Never **(skip to question 4.16)**
(2) Once
(3) 2-5 times
(4) More than 5 times

4.15. When was your most recent visit to your hometown?
(1) less than 3 months
(2) 3-6 months
(3) 7-12 months
(4) 1-3 years
(5) more than 3 years

4. 16. Do you plan to visit your hometown in the next 12 months?
(1) Yes
(2) No
(3) Don't know

4.17. Do you feel you are discriminated by Shanghai local people because you are a migrant?
(1) Yes
(2) No

Appendix I

Repeat Participation

1. Have you ever participate in this study recently (February through April 2009) organized by Shanghai Leyi-Fudan University: ___ **Yes** ___ **No**

Appendix II

Instructions: Below is some questions regarding smoking behaviors. If you have ***NEVER*** smoked please skip the whole section. ***When answering Q1 to Q8, please use "past 30 days" as a time reference.***

1. How many of those days did you: _____

2. On the days that you smoke, how many cigarettes do you smoke on average? _____

3. Do you smoke:

mainly when you are with people

mainly when you are alone

as often by yourself as with others

not at all in the past 30 days

4. How often do you smoke cigarettes while drinking alcoholic beverages?

Never

Rarely

Sometimes

Always

5. When you are consuming alcohol, what best describes your smoking level?

Less than usual

Slightly less than usual

About the same

Slightly more than usual

More than usual

6. How often do you smoke cigarettes while using other types of drugs?

Never

Rarely

Sometimes

Always

7. When you are using other drugs, what best describes your smoking level?

Less than usual

Slightly less than usual

About the same

Slightly more than usual

More than usual

8. How often do you smoke cigarettes without using alcohol or other drugs?

Always

Sometimes

Rarely

Never

9. On a scale of 0 to 10 with 0 being "not at all confident" and 10 being "extremely confident," assuming you want to, how confident are you that you could quit smoking if you wanted to?

10. On a scale of 0 to 10 with 0 being "not at all important" and 10 being "very important," how important is it that you quit smoking