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Predictors of Consistent Condom Use Among Chinese Female Sex Workers: An Application of the Protection Motivation Theory

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Abstract

We utilized the Protection Motivation Theory (PMT) to assess predictors of intention and behavior of consistent condom use among Chinese female sex workers (FSWs). A self-administered questionnaire was used in a cross-sectional survey among 700 FSWs in Guangxi, China.

Multivariate logistic regression analysis indicated that extrinsic and intrinsic rewards, self-efficacy and response costs predicted consistent condom use intention and behavior among FSWs.

STI/HIV prevention programs need to reduce FSWs' perceptions of positive extrinsic rewards and intrinsic rewards for engaging in consistent condom use, reduce FSWs' perception of response costs for using a condom, and increase condom use self-efficacy among FSWs.

Similar to those in other countries, female sex workers (FSWs) in China experience significant abuse and harm and are a marginalized and stigmatized group (Boittin, 2013). FSWs face not only psychosocial stress but also public health problems such as sexually transmitted infection (STI) including human immunodeficiency virus (HIV) infection due to

their vulnerability in society (Zhou et al., 2014). Because of the high risk for HIV/STI of FSWs, a better understanding of risk factors will inform HIV prevention programs among FSWs in China as well as other countries, especially Asian countries with high HIV prevalence.

Commercial sex in China has grown dramatically over the past decades (Tucker, Ren, & Sapio, 2010). The estimated number of FSWs has increased from 25,000 in 1985 to 2.8-4.5 million in 2006 (Lu et al., 2006). In 1949 when the Communist Party took over China, sex work was banned and reportedly eliminated (Boittin, 2013). During the 1980s, China's open door policy and economic reforms have been attributed to a remarkable resurgence in commercial sex (Cai et al., 2010). Most Chinese FSWs are rural-to-urban migrants (Kaufman, 2011). Sex work is a criminal offense in China. Law enforcement drives sex workers underground, affecting both their safety and access to health services (Kaufman, 2011). The presence of condoms or condom wrappers is sufficient evidence to prosecute FSWs by some law enforcement agencies (Zou, Xue, Wang, & Lu, 2012).

FSWs are at high risk for STI including HIV infection in China. In a study in five cities of China, researchers reported that the prevalence of gonorrhea and chlamydia among FSWs was 26% and 41%, respectively (Rou et al., 2007). Others reported that the prevalence of syphilis among FSWs was 11% (Lu et al., 2009). In China, most FSWs work in the entertainment or personal service establishments such as karaoke, night clubs, dance halls, discos, bars, saunas, hair salons, massage parlors, barbershops, roadside restaurants, and mini-hotels (Yang & Xia, 2006; Zhang et al., 2011). In China, most of the FSWs have both casual (commercial or non-commercial) and stable sexual partners (Rou et al., 2007). The rate of condom use among FSWs with their casual sexual partners has been reportedly low in China (Lau, Tsui, Siah, & Zhang, 2002). Behavioral surveillance data show that 60% of FSWs in China use condoms inconsistently (Wang et al., 2009). FSWs have less power to negotiate condom use since condom use depends on male cooperation and behavior, particularly in Chinese society with patriarchal norm (To, Tam, & Chu, 2012). Consistent condom use may also differ by the type of sexual partners (e.g., casual or stable) (Lofberg, Sharma, Keli, Bukusi, & Cohen, 2004; Macaluso, Demand, Artz, & Hook, 2000). To better understand factors predicting the intention and behavior of condom use among FSWs in China, a survey was conducted among 700 FSWs in two cities in Southwest China. We intend to explore the individual cognitive factors related to consistent condom use among FSWs in an area with high HIV prevalence.

Among individual factors, individual's perceptions and beliefs related to STI/HIV risk and self-efficacy of condom use have impact on FSWs' decision to use a condom (Zhang et al., 2004). We employ a social cognitive theory, Protection Motivation Theory (PMT) developed by Rogers (Rogers, 1983). PMT has been widely used to predict a range of health related intentions and behaviors, including STI/HIV risk reduction (Milne, Sheeran, & Orbell, 2000; Pack, Li, Stanton, & Cottrell, 2011; Stanton, Black, Kaljee, & Ricardo, 1993; Stanton et al., 1996). PMT postulates that facing a health threat evokes two cognitive pathways: threat appraisal and coping appraisal (Rippetoe & Rogers, 1987). Threat appraisal pathway evaluates the seriousness of the perceived threat and likelihood of suffering from the threat while the coping appraisal pathway assesses the effectiveness of the response to

the threat and the personal ability to take the response. These two appraisals include seven cognitive factors: intrinsic rewards, extrinsic rewards, vulnerability, severity, self-efficacy, response efficacy, and response costs (Rogers, 1983). In spite of the wide use of PMT in sexual risk reduction and condom use research among adolescents in different cultures (Chen et al., 2009; Kaljee et al., 2005; Li, Zhang, Mao, Zhao, & Stanton, 2011; Stanton et al., 2006; Zhang et al., 2004), there has been limited research assessing predictive value of PMT for predicting intention of consistent condom use and condom use behaviors among FSWs, a most-at-risk population of HIV infection in China. Our purpose in this study was to assess whether PMT factors predict intention and behavior of consistent condom use with different types of sexual partners (i.e., stable or casual) among Chinese FSWs.

Methods

Study site

This study was conducted in two touristic cities in Guangxi Zhuang Autonomous Region (Guangxi) in China. Guangxi is located in the southern part of China with a population of 46 million (National Bureau of Statistics of China, 2012). Guangxi has the second largest number of reported HIV cases among 31 provinces in China (China Ministry of Health, 2012). There is a high demand and a big market for commercial sex in Guangxi due to the prosperous economic development and tourism with a large number of FSWs providing sexual service primarily through commercial sex venues (Fang et al., 2007).

Participant recruitment and data collection

There were an estimated 2,000 FSWs in about 150 entertainment establishments in each of the two participating cities. In the current study, commercial sex venues in each city were identified by the research team through ethnographic mapping and 76 commercial sex venues were selected and participants were recruited from these commercial sex venues. Gatekeepers of these commercial sex venues were contacted for permission to invite FSWs in the venues to participate in the study. Women who worked in these venues and had provided sex for money or living materials were eligible to participate. A total of 700 women were recruited in two cities and a self-administered questionnaire was completed by each FSW in a private room of participating commercial sex venues. Each questionnaire took about 45 minutes to complete. Trained interviewers provided necessary assistance to participants during the survey. For those FSWs who had limited literary or had reading difficulty (less than 5%), interviewers read the questions and response options to the participants who selected and recorded their answers in the questionnaire. The study protocol was approved by the Institutional Review Boards at Wayne State University in the United States and Guangxi Center for Disease Control and Prevention (CDC) in China.

Measures

Demographic factors—Participants' age, ethnicity (Han vs. minority), original place of residence (urban vs. rural), education (not more than elementary school, middle school, at least high school), and monthly income were included in data analyses. Stable sexual partners were defined in this study as male sexual partners with whom FSWs had a long-term (e.g., more than six months) sexual relationship (e.g., husband, boyfriend or lover).

Casual sexual partners were defined as male sexual partners with whom FSWs had commercial or a short term sexual relationship (e.g., one-night stand).

PMT constructs—Items and Cronbach's alpha for seven PMT factors related to condom use are listed in Table 1. *Extrinsic rewards*: the perception of extrinsic rewards was assessed using four items related to peer approval or peer engagement of no-condom use (e.g., perceived proportion of FSWs who do not use condoms). *Intrinsic rewards*: the perception of intrinsic rewards was assessed with six items by asking participants about the psychological or physical pleasure of not using a condom (e.g., “I feel good without using a condom when having sex”). *Vulnerability*: the perception of vulnerability to be infected with STI/HIV was assessed using two items regarding the likelihood of acquisition of STI/HIV (e.g., “It is possible to be infected with STI/HIV without using a condom”). *Severity*: the perception of severity to be infected with HIV was assessed using five items (e.g., “When someone acquires HIV, his/her life is over”). *Response efficacy*: two items were used to assess perceptions of the effectiveness of using a condom (e.g., “Using a condom can reduce the likelihood of being infected with STI/HIV”). *Self-efficacy*: self-efficacy towards using a condom was measured using 11 items (e.g., “Even though my sexual partner does not want to use a condom, I can persuade him to use”). *Response costs*: ten items were used to assess possible barriers or negative consequences of using a condom (e.g., “If I insist on using a condom with my sexual partner, he may think that I have STI”). All items to assess the PMT constructs (except extrinsic rewards) had a 4-point response option (strongly disagree, disagree, agree, strongly agree). The items measuring extrinsic rewards had a 5-point response option (none, few, some, most, all).

Intention of consistent condom use—We used two items to assess participants' intention to use condoms consistently in the future with stable or casual sexual partners (“How often will you use condoms with your stable [casual] sexual partners in the future?”). Each of these two items had a 5-point response option from “not use at all” to “always use a condom”. These two items were dichotomized and used as dependent variables in the logistic regression analyses. If a participant answered that she will always use condoms with her sexual partners in the future, she was considered having intention of consistent condom use; otherwise, she was considered having no intention of consistent condom use.

Consistent condom use—Participants were asked about the frequency of condom use during the most recent three sexual episodes with stable sexual partners and casual sexual partners. These two questions had a 4-point response option (none, once, twice, three times). These items were dichotomized and used as dependent variables in the logistic regression analyses. If a participant answered that she used condoms three times during the last three sexual episodes, she was considered using condoms consistently; otherwise, she was considered using condoms inconsistently.

Data analyses

First, descriptive statistics are calculated to show the frequency distribution of demographic characteristics, condom use intentions and condom use. Second, Pearson Product Moment Correlations were employed to assess the associations between PMT factors and consistent

condom use intention and consistent condom use. Third, four multivariate logistic regression models were performed to further examine the association of PMT constructs with consistent condom use intention and behavior separately with stable sexual partners (Models 1 and 2) and with casual sexual partners (Models 3 and 4), while controlling for key demographic characteristics (age, education, residence, and income). Adjusted odds ratio (aOR) and their 95% confidence intervals (95% CI) were calculated for each predictor in the regression models.

Results

The mean age of FSWs was 26 years ($SD = 7.02$). About 78.6% of FSWs reported having stable sexual partners. FSWs who were Han ethnicity accounted for 79.4% of the sample (Table 2). FSWs who were rural residents accounted for 65.5%. The percentage of FSWs who completed at least high school education was 32.3%. The average monthly income of FSWs was about 3,772 Yuan (approximately US\$ 600, with an exchange rate one U.S. \$ = 6.3 Yuan at the time of survey).

About 80.3% of FSWs reported intention of consistent condom use. Rate of intention of consistent condom use (24.1%) with stable sexual partners was lower than that with casual sexual partners (80.3%). Rate of consistent condom use during the last three sexual episodes was 33.4% with stable sexual partners and 71.3% with casual sexual partners (Table 2).

The means of seven PMT constructs in terms of intention of consistent condom use and consistent condom use behavior with stable sexual partners or casual sexual partners are shown in Table 3. Four of the constructs (extrinsic rewards, intrinsic rewards, vulnerability, and self-efficacy) were significantly associated with intention of consistent condom use with stable sexual partners. Compared with those who had no intention of consistent condom use, FSWs who reported an intention of consistent condom use had lower extrinsic rewards (7.04 vs. 9.07, $p < .01$), lower intrinsic rewards (11.49, vs. 12.92, $p < .01$), higher perceived vulnerability (6.19 vs. 5.82, $p < .05$), and higher condom use self-efficacy (35.09 vs. 32.85, $p < .05$).

Three of the constructs (extrinsic rewards, intrinsic rewards, and self-efficacy) were significantly associated with consistent condom use in the last three sexual episodes with stable sexual partners. Compared with those who reported using condoms inconsistently in the last three sexual episodes, FSWs with stable sexual partners who reported using condoms consistently in the last three sexual episodes reported having lower extrinsic rewards (7.35 vs. 9.17, $p < .01$), lower intrinsic rewards (11.72 vs. 12.99, $p < .01$), higher self-efficacy (34.79 vs. 32.72, $p < .01$).

All seven PMT constructs were significantly associated with intention of consistent condom use with casual sexual partners among FSWs. Compared with those who had no intention of consistent condom use with casual sexual partners, FSWs who reported an intention of consistent condom use with casual sexual partners had lower extrinsic rewards (7.77 vs. 11.02, $p < .01$), lower intrinsic rewards (12.21, vs. 13.44, $p < .01$), higher perceived vulnerability (6.07 vs. 5.44, $p < .01$), higher perceived severity (13.91 vs. 13.19, $p < .05$),

higher response efficacy (6.23 vs. 5.89, $p < .05$), higher self-efficacy (34.32 vs. 30.62, $p < .01$), and lower response costs (21.91 vs. 23.35, $p < .05$). All seven PMT constructs were significantly associated with consistent condom use with casual sexual partners. Compared with those who reported using condoms inconsistently with casual sexual partners in the last three sexual episodes, FSWs who reported using condoms consistently in the last three sexual episodes reported lower extrinsic rewards (7.60 vs. 10.51, $p < .01$), lower intrinsic rewards (12.14, vs. 13.21, $p < .01$), higher perceived vulnerability (6.08 vs. 5.61, $p < .01$), higher perceived severity (14.03 vs. 13.15, $p < .01$), higher response efficacy (6.26 vs. 5.95, $p < .01$), higher self-efficacy (34.37 vs. 31.62, $p < .01$), and lower response costs (21.85 vs. 23.03, $p < .01$).

Multivariate logistic regression analyses results in Table 4 showed that while controlling for age, ethnicity, residence, education and income, extrinsic rewards (aOR = 0.892 [95% CI: 0.833~0.955]) and intrinsic rewards (aOR = 0.862 [95% CI: 0.786~0.945]) remained being predictive of intention of consistent condom use with stable sexual partners, (Model 1).

Results of regression Model 2 showed that extrinsic rewards (aOR = 0.906 [95% CI: 0.854~0.961]), intrinsic rewards (aOR = 0.903 [95% CI: 0.830~0.983]), and condom use self-efficacy (aOR = 1.050 [95% CI: 1.000~1.103]) remained being predictive of consistent condom use in the last three sexual episodes with stable sexual partners. In Model 2, ethnicity was significantly associated with consistent condom use with stable sexual partners (aOR = 0.487, [95% CI: 0.307~0.774]).

Results of regression Model 3 in Table 4 indicated that extrinsic rewards (aOR = 0.860 [95% CI: 0.815~0.909]), condom use self-efficacy (aOR = 1.099 [95% CI: 1.041~1.161]), and response costs (aOR = 0.936 [95% CI: 0.892~0.981]) remained being predictive of intention of consistent condom use with casual sexual partners.

Likewise, extrinsic rewards (aOR = 0.866 [95% CI: 0.823~0.910]), condom use self-efficacy (aOR = 1.049 [95% CI: 1.002~1.099]), and response costs (aOR = 0.955 [95% CI: 0.918~0.994]) remained being predictive of consistent condom use in the last three sexual episodes with casual sexual partners (Model 4).

In summary, multivariate logistic regression analyses indicated that the perception of extrinsic rewards was negatively associated with consistent condom use intention and behavior with both stable sexual partners and casual sexual partners. The perception of intrinsic rewards was negatively associated with consistent condom use intention and behavior with stable sexual partners but not with casual sexual partners. Condom use self-efficacy was positively associated with both consistent condom use intention and behavior with casual sexual partners and positively associated with only condom use behavior with stable sexual partners. Perception of response costs was negatively associated with consistent condom use intention and behavior with casual sexual partners but not with stable sexual partners.

Discussion

Results in the current study showed that FSWs had a high level of intention of consistent condom use and they were more likely to use condoms consistently with casual sexual partners than with stable sexual partners. This result is consistent with previous studies among FSWs (Wu et al., 2012). The rate of consistent condom use during the last three sexual episodes with casual sexual partners was higher in the current study (71%) than in other studies. For instance, researchers in India reported that the rate of consistent condom use during every sexual act with regular and occasional sexual clients was 9% and 16% (Medhi et al., 2012). Others who studied male clients of FSWs in the Philippines indicated the rate of consistent condom use was 22% (Regan & Morisky, 2012). These differences may attribute to some methodological differences between different studies. Because we measured the consistent condom use during the last three sexual episodes, recall bias may be low. The study of Regan and Morisky measured the consistent condom use based on the report from clients of FSWs. There may be differences in reporting of consistent condom use by men compared to women.

All seven PMT constructs assessed in this study had adequate internal consistency estimates (e.g., Cronbach alpha ranged from 0.66 to 0.93). Bivariate statistical analyses indicated that all seven PMT constructs were significantly associated with intention of consistent condom use and consistent condom use with casual sexual partners.

Results of regression analyses in this study indicated that self-efficacy is a critical predictor for consistent condom use with both stable sexual partners and casual sexual partners. The result of the positive association between condom use self-efficacy and intention and consistent condom use is consistent with other studies conducted among early adolescents, men who have sex with men (MSM), FSWs (Chen et al., 2012; Teng & Mak, 2011; Zhao, Wang, Fang, Li, & Stanton, 2008). Condom use self-efficacy includes two components: communication skills and emotional control (Baele, Dusseldorp, & Maes, 2001). FSWs who have high level of condom use self-efficacy may have good communication skills with their sexual partners regarding condom use. FSWs with high level of condom use self-efficacy may be able to control their emotions during sex. FSWs who have high level of condom use self-efficacy may be more confident in persuading their partners (both stable sexual partners and casual sexual partners) to use a condom.

Results in the current study indicated that the perception of extrinsic rewards is predictive of FSWs' intention of consistent condom use and behavior of consistent condom use with both stable sexual partners and casual sexual partners. The formation of extrinsic rewards perception of consistent condom use is based on the social norm and peer influence. Venue-based interventions to establish the atmosphere of health benefits of consistent condom use and negative health consequences of inconsistent condom use among this vulnerable group need to be strengthened.

The perception of intrinsic rewards is predictive for consistent condom use intention and behavior with stable sexual partners. When having sex with stable sexual partners, FSWs may be concerned more about the intrinsic rewards of not using a condom – advantage of

not using a condom (e.g., not using a condom may be good for the sexual relationship and emotional support, good for improving sexual pleasure). These kinds of intrinsic rewards may not often be produced when FSWs have sex with casual sexual partners since FSWs' purpose of having sex with casual sexual partners is not seeking or building a relationship.

Another factor that may affect intention of consistent condom use and consistent condom use is the response costs. Response costs played an important role on intention and behavior of consistent condom use with casual sexual partners. When having sex with casual sexual partners, FSWs may be concerned more about the costs and negative consequences of using or insisting to use a condom (e.g., reduced income, possible partner violence). When having sex with stable sexual partners, FSWs may also be concerned about the costs and negative consequences of using a condom. The costs may be possible partner violence, but not reduced income. Therefore, it can be surmised that FSWs may be more concerned about income rather than partner violence since economic factors play an important role in shaping FSWs' sexual decision-making in China (Wu et al., 2012). Economic factor also shows the powerful influence in other Asian countries. For instance, despite the prevalent partner violence against FSWs in Thai society, more than 86% of FSWs in Thai society would engage in unsafe sex (Nemoto, Iwamoto, Sakata, Perngarn, & Areesantichai, 2013).

PMT constructs of vulnerability, severity and response efficacy did not show significant associations with condom use with either casual or stable partners in the current study. It is possible that many FSWs may be unaware their susceptibility to infections and they may therefore be less concerned about the severity of the infections. Sexual and reproductive health education programs and STI/HIV prevention programs have been implemented for many years in China (Lou, Wang, Shen, & Gao, 2004; Wang, 2007). About 52% of the FSWs in this study were never married. Compared with married people, unmarried people were less likely to have access to contraceptive service (Zhang et al., 2004). In addition, some FSWs did not perceive the adverse outcomes of unprotected sex. Moreover, the high prevalence of STI among FSWs may result in the misconception that STI was common and acceptable among FSWs. This misconception may lead FSWs a low perceived severity of STI/HIV. Moreover, the underestimate of condoms' efficacy in preventing STI/HIV among FSWs may be because of the lack of knowledge about the role of condom in preventing STI/HIV or may be because of their previous experiences of condom failure.

Many researchers have examined the utilities of various PMT constructs in predicting condom use intention and behavior in different culture and different populations (Boer & Mashamba, 2005; Lwin, Stanaland, & Chan, 2010; Stanton et al., 1996). In a study among black adolescents in South Africa (Boer & Mashamba, 2005), only the perception of response efficacy to use condoms was found to be related to condom use intention. In a sample of urban adolescent African-Americans from a large eastern metropolis in the US, perceptions of response efficacy and self-efficacy predicted actual and intended condom use while perceptions of severity and vulnerability were not significant predictors (Stanton et al., 1996). Researchers who studied adolescents in Vietnam where the culture is similar to the culture of China did not find the significant differences for the constructs of extrinsic and intrinsic rewards (Kaljee et al., 2005). The different results from the study of Kaljee et al. may be because the population in their study had an extremely low rate of engagement in

sex (Kaljee et al., 2005). One study conducted among male clients of FSWs in the Philippines indicated that perceptions of HIV/AIDS severity and response efficacy toward condoms were significant factors of consistent condom use (Regan & Morisky, 2012). Chinese society is a patriarchal society and condom use is dominated by male sexual partners. To examine this particular culture has impact on PMT constructs in the population of FSWs, cross-cultural research is needed in future.

There are some potential limitations in this study. First, the sample in this study was a convenient sample. Subject-selection bias may exist since it is possible that some FSWs who had STDs or HIV infection might not be willing or not be able to participate in the survey. Second, data used in this study were collected through self-report, therefore, recall bias may exist. Third, this sample was selected in the commercial sex venues of two cities and data from this sample may not be extrapolated to FSWs in other areas. In addition, because this sample was selected from a province with a high HIV prevalence, the sample of the current study may not be representative of FSWs who are from areas with low HIV prevalence. Fourth, as this study is based on cross-sectional data, all the relationships between perceptions and intentions and behaviors were associational. The causal relationships need to be explored using longitudinal data.

Despite these potential limitations, the current study is one of the first efforts to examine the predictability of PMT constructs on consistent condom use among FSWs in China. The findings of the current study have several implications for the future HIV prevention programs among FSWs in China and other low- and middle-income countries. First, PMT may be an appropriate theoretical model to guide the assessment and development of intervention aiming to promote condom use among FSWs in China and other resource-poor countries. Second, interventions need to reduce FSWs' perceptions of rewards for non-consistent condom use, to reduce FSWs' perception of response costs for using a condom, and to increase condom use self-efficacy among FSWs. FSWs' condom use self-efficacy needs to be increased through improving FSWs' communication skills and emotional control skills with both stable sexual partners and casual sexual partners. Third, interventions promoting condom use should reduce response costs of condom use through correcting misconception regarding the association between condom use or STD/HIV infection. Fourth, it is necessary to consider the social norm and peers' influence in conducting a condom promotion intervention. The intervention needs to engage not only FSWs, but also other parties in their life and work, such as partners, clients, peers, gatekeepers, health care providers, and law reinforcement agencies.

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Figure 1.
Hypothesized model of condom use based on PMT

Table 1

List of items and Cronbach alpha of seven PMT constructs regarding condom use

Items	Alpha
Factors affecting maladaptive response probability	
Extrinsic rewards (4 items)	0.85
1.How many of FSWs use condom with stable sexual partners	
2.How many of FSWs use condom with casual sexual partners	
3.How many of FSW think that FSWs should use condom consistently	
4.How many of FSWs think that FSWs should use condom when having sex with a person known well	
Intrinsic rewards (6 items)	0.66
1.I feel better without using a condom when having a sexual intercourse	
2.It is easy to have organism without use a condom when having a sexual intercourse	
3.I feel more close to sexual partner without use a condom	
4.I need to use a condom when having a sexual intercourse (R)	
5.I feel safe for using a condom when having a sexual intercourse (R)	
6.I need to use a condom when having sex with a person known well (R)	
Vulnerability (2 items)	0.90
1.One can acquire STI when having a sexual intercourse without using a condom	
2. One can acquire HIV when having a sexual intercourse without using a condom	
Severity (5 items)	0.88
1.If a person has HIV, his/her whole life is over	
2.If a person has STI, he/she is difficult to face family members	
3.If a person has HIV, he/she will lose job	
4.If a person has HIV, he/she will lose friends	
5.If a person has HIV, he/she is difficult to face family members	
Factors affecting adaptive response probability	
Response efficacy (2 items)	0.93
1.Using a condom can reduce the risk of contracting STI	
2. Using a condom can reduce the risk of contracting HIV	
Self-efficacy (11 items)	0.92
1.It is my responsibility to use a condom when having a sexual intercourse	
2.I can use condoms consistently	
3.I believe that I can talk about condom use with my sexual partners	
4.I believe that I can put the condom on the penis of my sexual partner	
5.My sexual partner and myself know where to obtain the condoms	
6.If my sexual partner does not want to use a condom, I can persuade him to use	
7.If my sexual partner refuse to use a condom, I will not have sex with him	
8.I know how to use a condom correctly	
9.Even though I drink alcohol or use drugs, I still can insist on use a condom	
10.Even though my sexual partner drinks alcohol or use drugs, I still can insist on use a condom	

Items	Alpha
11. Whether using a condom or not is men's issue, women cannot make the decision (R)	
Response costs (10 items)	0.88
1. If I insist on using a condom, the atmosphere of having sex could be interrupted	
2. If I insist on using a condom, my sexual partner's mood could be interrupted	
3. Using a condom can reduce sexual pleasure	
4. Using a condom when having a sexual intercourse, a condom is often broken, leaked, or slipped off	
5. If a police finds me carrying a condom, I could have trouble	
6. If my family members find me carrying a condom, I could have trouble	
7. If I insist on using a condom, my sexual partner could think that I have STI	
8. Buying condoms in a store is embarrassing.	
9. I feel uncomfortable for carrying a condom with me	
10. It is troublesome to use a condom during sexual intercourse	

(R): item with reverse coding.

Table 2

Sociodemographic characteristics, intention of condom use, and condoms use in the last three sexual episodes, n (%)

	Total sample	FSWs had stable
N	700	550
Age, mean (SD)	25.7 (7.02)	26.2 (7.28)
16~19	123 (17.6)	92 (16.7)
20~29	403 (57.6)	309 (56.2)
30~39	132 (18.9)	110 (20.0)
40	42 (6.0)	39 (7.1)
Ethnicity		
Han	556 (79.4)	435 (79.1)
Minority	144 (20.6)	115 (20.9)
Residence		
Urban	241 (34.5)	178 (32.5)
Rural	457 (65.5)	370 (67.5)
Education		
Elementary school	82 (11.7)	69 (12.6)
Middle school	391 (55.9)	315 (57.4)
High school	226 (32.3)	165 (30.1)
Monthly income (Yuan), mean (SD)	3772.4 (3204.5)	3673.5 (3330.6)
1000	51 (7.4)	42 (7.8)
1001~2000	176 (25.6)	149 (27.6)
2001~3000	196 (28.5)	150 (27.8)
3001~4000	86 (12.5)	73 (13.5)
4001~5000	92 (13.4)	65 (12.1)
5001	87 (12.6)	60 (11.1)
Intention of condom use		
Not use at all	19 (2.8)	84 (15.3)
Occasionally	22 (3.3)	118 (21.5)
Sometimes	28 (4.1)	115 (21.0)
Often	64 (9.5)	99 (18.1)
Always	542 (80.3)	132 (24.1)
Condoms use in the last three sexual episodes		
None	68 (10.1)	203 (37.2)
Once	52 (7.7)	75 (13.8)
Twice	73 (10.8)	85 (15.6)
Three times	480 (71.3)	182 (33.4)

SD stands for standard deviation.

Table 3

Association analyses of PTM constructs to intention of consistent condom use and consistent condom use in the last three sexual episodes with stable sexual partners or casual sexual partners, mean (SD)

PMT factors	Total	With stable sexual partners				With casual sexual partners			
		Intention of consistent condom use		Consistent condom use		Intention of consistent condom use		Consistent condom use	
		no	yes	no	yes	no	yes	no	yes
Extrinsic rewards	8.47 (4.00)	9.07 (3.86)	7.04 (3.68)**	9.17 (3.83)	7.35 (3.83)**	11.02 (4.05)	7.77 (3.74)**	10.51 (4.25)	7.60 (3.60)**
Intrinsic rewards	12.49 (2.79)	12.92 (2.60)	11.49 (2.88)**	12.99 (2.56)	11.72 (2.92)**	13.44 (2.54)	12.21 (2.79)**	13.21 (2.52)	12.14 (2.84)**
Vulnerability	5.93 (1.48)	5.82 (1.51)	6.19 (1.45)*	5.84 (1.50)	6.06 (1.51)	5.44 (1.49)	6.07 (1.46)**	5.61 (1.53)	6.08 (1.44)**
Severity	13.73 (3.23)	13.56 (3.32)	13.87 (3.08)	13.52 (3.24)	13.89 (3.36)	13.19 (3.29)	13.91 (3.20)*	13.15 (3.16)	14.03 (3.23)**
Response efficacy	6.15 (1.37)	6.09 (1.35)	6.21 (1.42)	6.07 (1.36)	6.24 (1.42)	5.89 (1.35)	6.23 (1.35)*	5.95 (1.44)	6.26 (1.31)**
Self-efficacy	33.54 (5.75)	32.85 (5.76)	35.09 (4.61)**	32.72 (5.58)	34.79 (5.43)**	30.62 (5.40)	34.32 (5.60)**	31.62 (5.63)	34.37 (5.61)**
Response costs	22.20 (5.09)	22.28 (5.09)	22.29 (4.73)	22.54 (5.09)	21.73 (4.89)	23.35 (4.79)	21.91 (5.15)**	23.03 (4.96)	21.85 (5.15)**

SD stands for standard deviation.

* $p < .05$

** $p < .01$.

Multivariate logistic regression analyses of consistent condom use intention and behavior

Table 4

Factors	With stable sexual partners		With casual sexual partners	
	Model 1: <u>Intention of consistent condom use</u>	Model 2: <u>Consistent condom use</u>	Model 3: <u>Intention of consistent condom use</u>	Model 4: <u>Consistent condom use</u>
	aOR (95% CI)	aOR (95% CI)	aOR (95% CI)	aOR (95% CI)
Age	1.015(0.984~1.047)	1.022 (0.993~1.051)	1.001(0.970~1.033)	1.016 (0.987~1.045)
Ethnicity	0.834 (0.498~1.399)	0.487 (0.307~0.774) **	0.662 (0.370~1.184)	0.979 (0.615~1.561)
Residence	0.828(0.522~1.311)	0.795 (0.519~1.215)	1.007 (0.630~1.610)	0.945 (0.633~1.410)
Education	1.083 (0.809~1.448)	1.089 (0.836~1.419)	1.088 (0.804~1.472)	0.834 (0.643~1.082)
Income	0.923 (0.796~1.072)	0.985 (0.859~1.129)	1.118 (0.955~1.309)	1.122 (0.982~1.282)
Extrinsic rewards	0.892 (0.833~0.955) **	0.906 (0.854~0.961) **	0.860 (0.815~0.909) **	0.866 (0.823~0.910) **
Intrinsic rewards	0.862 (0.786~0.945) **	0.903 (0.830~0.983) *	0.972 (0.879~1.074)	0.973 (0.895~1.058)
Vulnerability	1.089 (0.910~1.303)	0.942 (0.800~1.108)	1.148 (0.959~1.374)	1.068 (0.912~1.252)
Severity	0.950 (0.876~1.029)	0.998 (0.927~1.075)	0.989 (0.900~1.086)	1.042 (0.964~1.127)
Response efficacy	0.898 (0.734~1.097)	0.947 (0.789~1.136)	0.836 (0.668~1.048)	0.868 (0.717~1.051)
Self-efficacy	1.040 (0.985~1.097)	1.050 (1.000~1.103) *	1.099 (1.041~1.161) **	1.049 (1.002~1.099) *
Response costs	1.036 (0.992~1.083)	0.992 (0.953~1.033)	0.936 (0.892~0.981) **	0.955 (0.918~0.994) *

* $p < .05$ ** $p < .01$.