

What Matters and Changes in Condom Use? Public Perceptions and Practices before and after the 2004 HIV/AIDS Campaign in Taiwan

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Abstract

With two waves of nationwide survey data collected before and after the 2004 World AIDS Day campaign in Taiwan, the study aims to analyze examine factors contributing to public perceptions, beliefs, and behavioral decisions of condom use in relation to HIV/AIDS prevention in Taiwan. Gender differences in perceived functions and barriers of condom use are explored. Changes made due possibly to the overall campaign efforts are also examined. Implications of the findings for future research and campaign practices as well as limitations of the study are discussed to conclude the study.

Keywords: campaign, condom use, HIV/AIDS, survey, Taiwan

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Introduction

Mass media campaigns aimed at improving specific health conditions have been used worldwide and have targeted various health problems. The spread and threat of the HIV/AIDS epidemic has further stimulated interest in intentional use of mass media for health education (Brown & Walsh-Childers, 1994). The effects of health-promotion media campaigns have been varied, from an era of *minimal effects* in the 1940s and 1950s, a *campaign can succeed* era in the 1960s and 1970s, a *moderate effects era* in the 1980s and 1990s, to a *conditional effects era* in the present days. That is, the related literature is beginning to amass evidence that “targeted, well-executed health mass media campaigns can have small-to-moderate effects not only on health knowledge, beliefs, and attitudes, but on behaviors as well” (Noar, 2006, p. 21).

Indeed, after nearly three decades of HIV/AIDS campaign efforts launched in various settings, the accumulative experiences in designing and using media strategies have provided substantive evidence, for examples, in Europe (Wellings, 2002), the US (Edgar, Fitzpatrick, & Freimuth, 1992; Perloff, 2002), Asia and Africa (McCombie, Hornik, & Anarfi, 2002; McKee, Bertrand, & Becker-Benton, 2004) to support Noar’s (2006) aforementioned proposition that media campaigns sometimes do increase public actions in supporting HIV/AIDS prevention-related matters. Therefore, an investigation of changes in HIV/AIDS-related perceptions and behavioral decisions other than merely looking at the increases in individuals’ knowledge of accurate transmission routes is of critical concern to us.

In Taiwan, ever since the first AIDS case was reported in December 1984, the number of HIV infections remains relatively low compared with some Asian countries and other parts of the world. By June, 2004, the time right before the present study was conducted, 6,255 people

were infected with HIV, with 97.84% ($N = 5,789$) being local Taiwanese. Of the 5,789 HIV positive locals, 82.62% were sexually transmitted: 36.9% were infected by heterosexual contact; 45.72% by men having sex with men. Most of the infected were male (93.44%), aged 20-29 years (37.21%), followed by those in the age group between 30-39 years (33.81%). (Center for Disease Control, Taiwan, 2004, June 30).

Both Taiwanese health authorities and local non-government organizations (NGOs) started to design and disseminate AIDS information media messages in 1988, following the theme of World AIDS Day (Hsu, 2001). National HIV/AIDS campaigns are generally organized by the Center for Disease Control (CDC) and implemented by the private advertising or public relations firms whose campaign proposals are evaluated and accepted on a competitive basis. The 2004 World AIDS Day campaign on *Women, Girls, HIV and AIDS* launched by UNAIDS was dedicated to addressing female vulnerability to HIV, seeking to raise awareness about, and help address, the many issues affecting women and girls around HIV and AIDS (UNAIDS, 2004).

Indeed, women are more susceptible to HIV than men. Globally, studies have shown that young women and girls can be 2.5 times more likely to be HIV-infected than their male counterparts (UNAIDS, 2004). The low prevalence rate of Taiwanese women (6.56%) seems to imply that they are not at high risk of HIV infection. Still, two things deserve our attention. First, there are several mandatory tests to screen men when they go to the military services, at work and so on. While the prevalence of men's HIV status can be more systematically traced and documented, that of women, on the contrary, could have been underreported. Second, female people living with HIV/AIDS (PLWHA) in Taiwan were mostly aged 25-39 (64.59%), married (71.58%), unemployed (29.84%), homemakers (21.97%), service sector employees (15.90%) or blue collar (8.85%) workers. They were contracted with AIDS mostly via heterosexual contact (increasing from 10.3% in 1994 to 61.80% in May, 2004) (Center for

Disease Control, Taiwan, 2004, June 30). Such a profile reveals that female PLWHA tended to be socially and economically disadvantaged. They were also considered the least empowered with the necessary information, perceptions and actions in fighting against HIV/AIDS for their own good.

To identify the problems facing women and HIV/AIDS in Taiwan with the hope to design effective local campaign messages and strategies, a formative evaluation research, including reviews of previous campaign reports, three focus group discussions of practitioners and researchers, and a nationwide public opinion telephone survey, was conducted. By summarizing these findings, two major objectives were proposed and then accepted by the Taiwanese CDC for the local World AIDS Day campaign of the same year: (1) to raise women's awareness for self protection and then to be assertive in asking their partners to wear condoms during sex; and (2) to motivate men to initiate the use of condoms during sex (Hsu, 2004).

A diverse variety of media channels, modes and vehicles were used to disseminate the campaign messages in November and December, 2004. They mainly included: (1) public service announcements (PSAs) targeted at the urban and rural audiences, respectively, via television, radio, magazines, newspapers, pamphlets, booklets, big-screen TV in public transportation stations, Web pages, and outdoor media (e.g., billboards and posters); (2) press releases of the campaign activities and the supporting new policies such as free HIV screening for pregnant women and availability of condoms in hotel rooms; (3) public relations messages arranged on television and radio talk shows, as well as newspaper and magazine feature stories; and (4) entertainment inserts by embedding HIV/AIDS prevention-related materials in TV soap opera and variety show programming (Center for Disease Control, Taiwan, 2004, November 24, December 31).

This study, with data collected as part of the formative and summative campaign

evaluations, aims to examine factors contributing to public perceptions and behavioral decisions of condom use in relation to HIV/AIDS prevention in Taiwan. Specifically, it will compare the changes before and after the 2004 campaign. Gender differences in psychological and behavioral barriers to condom use will also be explored.

Infection Fear, Preventive Perceptions and Practices

Individuals' perceived susceptibility to disease has been a core component of some guiding framework for health behavior interventions, such as the health belief model (Strecher & Rosenstock, 1997), but it has proven to be more elusive and complex than researchers assumed. Critics have noted that perceived susceptibility is not ideally suited to predicting sexual behavior because emotional and physiological factors may dominate in predicting individuals' actions (Perloff, 2001). Certain level of fear or worry about the disease, on the other hand, appears to have considered the affective dimensions of individuals' subjective appraisal of disease infection, such as HIV/AIDS.

Over the years, health researchers and practitioners have investigated the effectiveness of using fear messages, either by rational statistics or emotional appeals, to induce individuals' fear of disease infection, and thus individuals' behavioral change (e.g., Witte, Meyer, & Martell, 2001). Literature in health risk communication has also revealed that when people have greater affective responses (e.g., more worry or scared) to certain health risks, they tend to perceive a greater need for information (Griffin, Neuwirth, Dunwoody, & Giese, 2004), or to be activated to reduce that fear (Witte, 1994). Specifically, individuals with high levels of perceived efficacy will be motivated to engage in risk reduction behaviors (Rimal, 2001; Rimal & Real, 2003; Witte, 1994).

Following the same line, the study will investigate whether individuals' fear of HIV/AIDS infection positively predicts their perceptions of condom use as the best preventive

method (i.e., condom-the-best, *Hypothesis 1A*) and their behavioral decisions of condom use, including both negotiation with partners (*Hypothesis 1B*) and actual practice (*Hypothesis 1C*).

Subsequently, we predict that individuals with condom-the-best perception are more willing to engage in condom use negotiation (*Hypothesis 2A*) and practice (*Hypothesis 2B*). We also hypothesize that individuals' condom-the-best perception will be increased by the campaign efforts (*Hypothesis 2C*).

Condom Negotiation and Use

Among all HIV/AIDS preventive methods, male condoms have been well acknowledged to be the obvious means of thwarting HIV transmission immediately on recognizing that AIDS is caused by a sexually transmitted pathogen (Kalichman, 1998, p. 29), especially among women in heterosexual relationships (Quina, Harlow, Morokoff, & Saxon, 1997; Katz, Fortenberry, Zimet, Blyth, & Orr, 2000). The female condom is an option, but it has not yet become widely available and accepted in most parts of the world, including Taiwan.

Condom use¹ is a practice in which individuals' sexual partners must agree to, or be persuaded to, participate. Many people, again, women particularly, still have difficulties asserting themselves in intimate situations. Married women are particularly placed in a disadvantaged and embarrassing position to initiate condom use for the purpose of disease protection (Zierler & Krieger, 1997). The low condom adoption rate may be attributed to the individuals' inability to negotiate condom use with their partners (Miller, Murphy, Clark, Hamburger, & Moore, 2004). Lack of experience and confidence in discussing sex with partners interferes with women's initiation of safer sex discussions.

Yet, all efforts to prevent sexually transmitted HIV infection occur in the context of interpersonal, intimate relationships. Discussion of safer sex practices is often perceived as a

¹ From here on throughout the rest of the paper, condom refers to 'male condom' unless otherwise indicated.

delicate situation. In a study of African American and Latina female clients of methadone clinics, condom use was demonstrated to be related to women's attitudes toward the negotiation of safer sex with a partner, and to their level of comfort with communication skills with the partner (Schilling, El-Bassel, Gilbert, & Schinke, 1991).

Therefore, the study proposes that willingness to negotiate condom discussions positively predicts willingness to use condoms (*Hypothesis 3A*). We also hypothesize that campaign efforts will increase individuals' willingness to negotiate condom discussions (*Hypothesis 3B*) and to use condoms (*Hypothesis 3C*).

Socio-Demographics, Preventive Perceptions and Practices

As condoms are not used in relationships perceived as safe, they are least likely used in relationships that are labeled steady or exclusive (Kalichman, 1998), such as among married couples. Unlike married couples who experience several barriers to dissolution, individuals in dating or casual relationships tend to engage more in safer sex discussions and practices (Emmers-Sommer & Allen, 2005, pp. 19, 31). In a Taiwanese nationwide survey conducted in 2000, condoms were found to be used more among singles than among married people, particularly for people under 35 years old (Lew-Ting, 2000). As the traditional Chinese value of expecting single women to be abstinent has been found to conflict with increasing acceptance of premarital sex in Taiwan,² it becomes intriguing to observe whether an individual's marital status, an index to a stable relationship, is also predictive of his or her safer sex practice.

Thus, we are interested in exploring how various socio-demographic differences will

²According to a nationwide public opinion survey conducted in February, 2004, of the 824 valid single respondents aged 15 and above, as high as 61% of the respondents accepted premarital sex, while a higher 66% accepted the idea of living together without marital ties (Valentine's eve: Public opinion poll, 2004, February 13).

exert influences on individuals' perceptions and practices of condom use. Specifically, we hypothesize that: (1) men are more likely than women to perceive condom use as the best HIV preventive method (*Hypothesis 4A*), to express willingness to negotiate condom discussions (*Hypothesis 4B*) and to use condoms (*Hypothesis 4c*); (2) married people are less likely to perceive condom use as the best HIV preventive method (*Hypothesis 5A*), to express willingness to negotiate condom discussions (*Hypothesis 5B*) and to use condoms (*Hypothesis 5c*); (3) age negatively predicts condom-the-best perception (*Hypothesis 6A*) and willingness in condom negotiation (*Hypothesis 6B*) and practice (*Hypothesis 6C*); and (4) educational level, however, positively predicts condom-the-best perception (*Hypothesis 7A*) and willingness in condom negotiation (*Hypothesis 7B*) and practice (*Hypothesis 7C*).

In addition to socio-demographic factors, the potential for condoms to prevent sexually transmitted HIV infection is often offset by individuals' psychological resistance to consistently use condoms. Indeed, condom use is mostly perceived to serve as contraceptives rather than to prevent sexually transmitted diseases (STDs), including HIV/AIDS (Metts & Fitzpatrick, 1992). In the previously mentioned Taiwanese survey, 86.1% of the condom users indicated that they used condoms for contraceptives (men: 84.5%; women: 88.5%). Only 14.4% used them to prevent STDs (men: 17.0%; women: 10.8%) (Lew-Ting, 2000). An obstacle for individuals, especially women, to use condoms to prevent themselves from being HIV-infected can be obviously seen. Nevertheless, more systematic efforts are still in need to document gender differences in individuals' perceived functions and barriers of condom use. Therefore, we will address this issue as a research question (*Research question 8A*) rather than predict hypothesized relationships. Similarly, we will examine whether the campaign has an impact on such differences (*Research question 8B*).

Method

Sampling Procedure

As mentioned previously, data collection in this research comes from both of the formative and summative evaluations of the 2004 World AIDS Day Campaign in Taiwan.³ Two telephone surveys⁴ were conducted before and after the campaign activities on a nationally representative sample aged 18-65 and married women under 18,⁵ through CATI (computer-assisted telephone interviewing). Such a pre-/post-comparison design provides a baseline against which to compare the post-campaign scores so as to reduce the selectivity threat to validity (Valente, 2001).

Specifically, a random-digit sampling technique was applied to households all over Taiwan to avoid the problem of unlisted telephone numbers. Within each household, the resident who first answered the phone and met the inclusion criteria was considered the potential respondent. For each survey, probability proportionate to size sampling was used to control respondents' sex, age, and residential area. Raking ratio estimation⁶ was adopted to ensure characteristics of the weighted sample matched census data concerning the aforementioned demographic categories.

³ Detailed descriptions of both formative and summative evaluation procedures and results, and analyses of the contents and strategies used in the campaign messages were beyond the scope of the present study.

⁴ As of June 2004, there were over 13.4 million main telephone lines in Taiwan, achieving a penetration rate of 59.38 %, with 98 % of households receiving telephone service (Government Information Office, Taiwan, 2005). Given such a high telephone penetration rate, using telephone interviews in the present study can reduce the sampling bias and thus increase the representativeness of the sample (Babbie, 1998).

⁵ Married women under 18 were recruited in the study because there are an increasing number of under-age female spouses coming from South-east Asia and China to Taiwan in recent years. Due to the unavailability of census data of this group, it will not be included in the goodness-of-fit tests between survey samples and populations.

⁶ Raking ratio estimation is based on an iterative proportional fitting procedure developed by Deming and Stephan (1940). It involves simultaneous ratio adjustments of sample data to two or more marginal distributions of the population counts. With this approach, the weights are calculated such that the marginal distribution of the weighted totals conforms to the marginal distribution of the targeted population; some, or all, of the interior cells may differ.

Both surveys were conducted between 6:20 and 10:00 p.m. each evening within a week. The unanswered calls were called back three times each. The pre-campaign survey was conducted on 2,153 residents from June 3 to 9, 2004 with the response rate being 54.62%.⁷ According to the published census statistics, there were 17,624,600 Taiwanese residents aged 18 and older by the end of 2003 (Department of Statistics, Ministry of Interior, Taiwan, 2003, December). Chi-square tests (goodness of fit) yielded significant ratio differences between population and sample distributions by sex ($\chi^2 = 50.341$, $df = 1$, $p < .001$) and age ($\chi^2 = 121.651$, $df = 8$, $p < .001$), but they became statistically insignificant by using the aforementioned weighting procedure (sex $\chi^2 = 0.922$, $df = 1$, $n.s.$; age $\chi^2 = 0.760$, $df = 8$, $n.s.$).

The post-campaign survey was conducted on 2,042 residents from January 13 to 19, 2005 with the response rate being 59.30%.⁸ According to the published census statistics, there were 17,344,075 Taiwanese residents aged 18 and older by the end of 2004 (Department of Statistics, Ministry of Interior, Taiwan, 2004, December). Chi-square tests also yielded significant ratio differences between population and sample distributions by sex ($\chi^2 = 72.521$, $df = 1$, $p < .001$) and age ($\chi^2 = 137.813$, $df = 8$, $p < .001$). Similarly, these differences became statistically insignificant after weighting adjustment (sex $\chi^2 = 0.534$, $df = 1$, $n.s.$; age $\chi^2 = 2.036$, $df = 8$, $n.s.$).

Measures

Perception of HIV/AIDS preventive method

Respondents were asked to rank the three preventive methods of the “ABC” approach – *Abstinence, Be faithful, and use Condoms*. The responses were recoded using the following convention: “1=choosing” and “0=not choosing” condom use as the best preventive method.

⁷ With a total of 11,338 phone dials, 1,789 respondents (15.8%) refused to participate in the survey. This figure, however, is considered to be reasonable, given the sensitive nature of self-reporting sexual and condom use practices.

⁸ With a total of 10,201 phone dials, 1,404 respondents (13.8%) refused to participate in the survey.

Willingness to negotiate condom use

As a measure of respondents' willingness to negotiate safer sex with their sex partners, the following item was used, "Would you discuss with your sex partner about condom use?" The responses were categorized as "1=yes" and "0=other" (including "never" and "it depends").

Willingness to use condom

This variable was measured by an item asking respondents whether they would use condoms when having sex with their partners. The responses were also dichotomized as "1=yes" and "0=other" (including "never" and "it depends").

Infection fear

Two types of infection fear were employed in the study. The first was personal anxiety over the threat of the disease measured by on the following item, "Are you worried about contracting AIDS?" The other type of infection fear comes from intimate sexual contact, by asking the survey respondents, "Are you worried about being infected by your sexual partner?" Both items were rated using a 5-point Likert scale. The responses were recoded so that the higher one scored, the less one worried about infection.

Functions of condom use

Respondents were asked by an open-ended question to indicate their perceived functions of condom use. These multiple responses were later regrouped into the following: (1) preventing STDs; (2) contraceptives; (3) preventing AIDS; (4) protecting personal safety; (5) preventing cervical cancer; (6) seeking pleasure; (7) other; and (8) don't know.

Barriers to condom use

For those respondents who were not willing to use condoms, they were also asked by an open-ended question to provide their reasons of non-use. These multiple responses were

categorized as follows: (1) unnecessary; (2) not used to it; (3) planning pregnancy; (4) inconvenient; (5) unacceptable by partner(s); (6) other; and (7) don't know.

Socio-demographics

Previous studies (e.g., Hsu & Huang, 1997; Lew-Ting, 2000) have shown that in addition to gender, differences in marital status, age, and education also exerted significant influences on individuals' intention or actual behavior to use condom in Taiwan. Therefore, the study included these four socio-demographic variables in predicting their impact on individuals' perception of and willingness to negotiate and practice condom use. Respondents' marital status was recoded into "married" and "other". Age was measured by nine categories: (1) under 20; (2) 20-24; (3) 25-29; (4) 30-34; (5) 35-39; (6) 40-44; (7) 45-49; (8) 50-59; and (9) 60-65. Educational levels consisted of four categories: (1) elementary school or less; (2) junior high school; (3) senior high school; and (4) university or above.

Data Analysis

Data analysis was carried out in two stages. The first stage consists of frequency distributions and chi-square analyses of the variables to be examined. Gender differences in respondents' perceived condom functions and reasons for not using condoms during sex were also explored. The second stage of the data analysis involves several logistic regressions⁹ to examine the effects of various predictors on respondents' condom perceptions, and willingness to negotiate and practice condom use, respectively.

⁹ By categorizing the dependent variable as dichotomous, logistic regression analysis is generally used for predicting whether something will happen or not (Vogt, 1993, p. 131), such as variables of condom perception, and behavioral decisions of condom negotiation and use in the study. Independent variables may be categorical or continuous in this type of statistical analysis (Vogt, 1993, p. 131).

Results

Descriptive Statistics

Distributions of respondents' gender, age, marital status, and educational levels for both surveys are displayed in Table 1. In general, nearly 60% of the respondents were female; around 70% of the respondents were married and between 30 and 59 years of age; respondents' educational levels were mostly (around three quarters) senior high school and above. Chi-square tests also show that the two survey samples were not significantly different from each other by the above socio-demographic variables. Therefore, 97.5% ($N = 2,099$) of the respondents from the pre-campaign survey and 96.4% ($N = 2,064$) from the post-campaign survey have heard of HIV/AIDS and were retained for further analysis in the study.

(TABLE 1 ABOUT HERE)

Fear of HIV Infection

As displayed in Table 2, the majority of the respondents did not worry about getting AIDS or being infected by their partners, but the proportion dropped about 10-12% after the campaign. For not worrying about getting AIDS, from 76.8% (pre-campaign survey) to 64.7% (post-campaign survey); for not worrying about being infected by their partners, from 77.8% (pre-campaign survey) to 67.2% (post-campaign survey). These differences found between the two surveys are also statistically significant (worrying about getting AIDS: $\chi^2 = 95.503$, $d.f. = 4$, $p < .001$; worrying about being infected by partners: $\chi^2 = 82.435$, $d.f. = 4$, $p < .001$). That is, respondents' fear of HIV infection, both personal worries about the disease and worries about being infected by sex partners tended to increase after the 2004 campaign.

(TABLE 2 ABOUT HERE)

Perceptions of Condom Use

In addressing questions 8A and 8B, we analyzed gender differences in respondents' perceived functions and barriers of condom use. More than 70% of the total respondents thought condom use could prevent from getting STDs (pre-campaign: 77.4%; post-campaign: 77.1%), serve as contraceptives (pre-campaign: 77.0%; post-campaign: 72.1%) and prevent from getting AIDS (pre-campaign: 75.9%; post-campaign: 71.1%). Except for condom use to prevent from STDs as perceived by men, the percentages of respondents choosing the above functions decreased slightly after the campaign (see Table 3).

(TABLE 3 ABOUT HERE)

As can be seen in Table 3, women perceived condom use as protecting their personal safety and prevention from getting cervical cancer more than men did. Both sexes decreased in their perceptions of using condoms for personal safety after the campaign, while they increased their perceptions of using condoms to avoid getting cervical cancer. Men perceived condom use as related to seeking pleasure more than women did, though the percentages dropped after the campaign for both sexes.

We then went further to examine the barriers to condom use between the two surveys. For those respondents who were not willing to use condoms (pre-campaign $N = 706$; post-campaign $N = 658$), the top reason given was "it is unnecessary," particularly among men (see Table 4). Nevertheless, the percentages of naming this reason decreased after the campaign (from 78.9% to 70.1%). An increase was found in respondents indicating that they were not used to it (pre-campaign: 13.5%; post-campaign: 17.2%), particularly among women.

(TABLE 4 ABOUT HERE)

Effects of Various Predictors on Perceptions and Behavioral Decisions of Condom Use

We first compared the before- and after-campaign differences of respondents' perception and behavioral decisions of condom use. Chi-square analysis results show that while 24.4% of the pre-campaign survey respondents chose 'condom use' as the best HIV-infective prevention method, the percentage was increased to 41.6% after the campaign ($\chi^2 = 138.983$, $d.f. = 1$, $p < .001$). Moreover, respondents' willingness to negotiate condom use with partners increased after the campaign (pre-campaign: 41.4%; post-campaign: 44.8% ($\chi^2 = 4.949$, $d.f. = 1$, $p < .05$)). They also reported more willingness to use condom after the campaign (pre-campaign: 44.1%; post-campaign: 52.8%; $\chi^2 = 29.091$, $d.f. = 1$, $p < .001$).

To further clarify the nature of relationships between infection fear, the campaign, and perceptions/behavioral decisions of condom use, logistic regressions were performed by adjusting the effects of sex, marital status, age, and education. The first model looked at respondents' perception of condom use as the best HIV-infection preventive method. The second model, by adding the previous dichotomized dependent variable as a new predictor, analyzed the pattern of willingness to negotiate condom use. Finally, the above two dependent variables were included as predictors of the third model, which examined the pattern of respondents' willingness to practice condom use. The predicted relationships of each model are shown in Figure 1.

(Figure 1 ABOUT HERE)

As indicated in Table 5, both types of infection fear exerted influences on respondents' perception of condom use. The more one worried about getting AIDS ($B = .071$, $p < .05$) and being infected by sex partners ($B = .084$, $p < .01$), the more likely one chose condom use as the best method of HIV/AIDS prevention. The results confirmed the expectations of H1A. The campaign had an impact too. Post-campaign survey respondents tended to be more supportive of condoms as the best method than their pre-campaign survey counterparts (B

= .750, $p < .001$), supporting H2C.

(TABLE 5 ABOUT HERE)

The patterns of both types of infection fear on respondents' willingness to negotiate and practice condom use in the second model were similar to that in the first model (fear of getting AIDS $B = .072$, $p < .05$; fear of being infected by partners $B = .081$, $p < .05$), confirming H1B. The campaign did not seem to have a significant effect on increasing respondents' willingness to engage in such a practice ($B = .093$, *n.s.*), a result somewhat different from what was found in the chi-square test. H3B was not supported. Perception of condom use positively predicted willingness to negotiate condom use ($B = .163$, $p < .05$). That is, respondents who chose condom use as the best preventive method also tended to be more likely to negotiate such a use with their sex partners, consistent with the prediction of H2A.

In model three, the effects of infection fear as shown in the previous two models became statistically insignificant, which failed to confirm H1C. The effects of condom-the-best perception ($B = .600$, $p < .001$) and willingness to negotiate condom use ($B = 1.037$, $p < .001$) were more pronounced on willingness to use condoms, as predicted by H2B and H3A, respectively. The campaign made a difference too ($B = .262$, $p < .001$). The increasing behavioral decision of condom use was evident after the campaign, similar to the result found in the aforementioned chi-square analysis. H3C was supported.

As can be seen in Table 5, socio-demographic variables such as age and education also demonstrated various types of influences in the three models. The younger the respondent, the more likely to perceive condom use as the best HIV/AIDS preventive method ($B = -.0968$, $p < .01$, in model 1), as predicted by H6A. Younger respondents also expressed more willingness to negotiate condom discussions ($B = -.079$, $p < .001$, in model 2) and to use condoms as well ($B = -.158$, $p < .001$, in model 3), consistent with expectations of H6B and

H6C, respectively. Educational level, though failing to positively predict condom-best perception (H7A), emerged as a significant predictor of respondents' behavioral decisions of condom negotiation and actual condom use. Except for the statistically insignificant difference on condom use between respondents with elementary school and below and junior high school levels, the logistic regression results showed that the higher the educational level, the more likely to indicate willingness to negotiate and practice condom use. H7B and H7C were partially confirmed. Respondents' gender and marital status were surprisingly unrelated to any of the three dependent variables measured in the study, contrary to expectations of all hypotheses 4's and 5's.

Discussion

To recapture the major findings of the study, both types of individuals' infection fear, condom-the-best perception, and willingness to use condoms, were increasingly raised after the 2004 campaign. The campaign did not seem to affect individuals' willingness to negotiate condom use with their partners. Furthermore, both types of infection fear were positive predictors of individuals' perception and willingness to negotiate condom use, either directly or indirectly via condom-the-best perception. The effects, however, became insignificant when directly predicting willingness of to use condoms. Individuals' condom-the-best perception also positively predicted their willingness to use condoms, directly or when being mediated by willingness to negotiate condom discussions.

Among the socio-demographic variables examined in the study, age remained the strongest predictor of all of individuals' condom-related perceptions and behavioral decisions. The younger the people, the more likely to perceive condom use as the best HIV preventive method, and to express willingness to engage in condom negotiation and practice. Individuals' educational level positively predicted condom negotiation and practice, but it failed to exert influences on individuals' condom-the-best perception. None of individuals' condom-related

perceptions and behavioral decisions was significantly predicted by sex and marital status, respectively.

The Roles of Infection Fear

The insignificant effects of fear infection on predicting willingness of to use condoms suggests that merely increasing individuals' level of fear or worry is not enough in the system that affects behavioral outcomes in HIV/AIDS prevention. What deserves our attention more is the fact that nearly two-third of the post-campaign survey respondents still did not worry about getting AIDS or being infected by their partners. Some may be empowered with necessary HIV preventive information and communication skills; others may actually perceive little risk, feel invulnerable to the disease, and thus overlook HIV/AIDS-related issues. Future campaign designs could be made to increase the perceived relevance of HIV infection among these people, i.e., individuals of the latter category. Appropriate cues to actions could also be incorporated into the campaign message designs to motivate people to engage in the so-called "danger control processes" (Witte, 1994; Witte, Meyer, & Martell, 2001). Thus, target individuals are more likely to make recommended behavioral changes such as negotiating and practicing condom use and protect themselves from contracting AIDS.

Perceptions of Condom Use

The study has found a drastic increase (from 24.4% to 41.6%) of respondents' identification of condom use, among other methods, as the best HIV/AIDS preventive method after the 2004 campaign. The significant effects of condom-the-best perception in predicting respondents' practices of negotiating and actual condom use reinforces the belief that continuous efforts to promote safer sex by using condoms will still be considered the most efficient and pragmatic way of fighting against HIV/AIDS as transmitted sexually. To do so,

two things need to be taken into account when applying the survey findings to the real-world planning of campaign strategies. First, we can explore the multiple functions that condoms can possibly serve and then package these functions into the prevention messages. Strategies of promoting these functions, of course, should be tailored to the idiosyncratic needs of the target groups, such as gender differences in perceiving condom functions.

Furthermore, an examination of the perceived barriers to condom use could help develop specific strategies to enhance individuals' self efficacy of condom adoption. For most non-condom users surveyed in the study, the predominant reported reason of non-use was that "it is unnecessary." Fortunately, the percentage dropped greatly after the 2004 campaign. What increased was the reason of "not being used to it." In other words, individuals, though still inactive in adopting condoms, have changed their perceptions of such a safer sex practice – from something that was not needed to something that could be of use but was not made comfortable to the users. Thus, future campaign practitioners could develop strategies to ease the various types of discomforts of condom use, as reported by the target groups. Again, idiosyncratic needs such as those found between men and women, should be taken into account.

Sexual Communication and Negotiating Safer Sex

The failure to find significant campaign effect on increasing respondents' motivation to negotiate condom use suggests that future HIV/AIDS prevention interventions could work toward increasing individuals' abilities to communicate assertively and effectively with their sex partners. Communication assertiveness is an ability to communicate effectively one's desire for safer sex (Catania, Coates, Kegeles, & Fullilove, 1992; Quina, Harlow, Morokoff, & Saxon, 1997). The 2004 World AIDS Day campaign in Taiwan may have raised public awareness to the theme, but both empowerment with communicative assertiveness and actions

to negotiate condom discussions take time to be in effect. Future studies could be conducted by including longitudinal research design to systematically trace the changes over time.

Moreover, as mentioned, far from occurring in a vacuum, communication about condoms occurs in a complex, value-laden, interpersonal context with competing goals, emotional agendas, and dynamic compliance-gaining strategies (Perloff, 2001). When individuals negotiate safer sex, they are constantly constructing the meaning of actions and are responding to the perceived goals of their partners, as well as their own goals. The relative values of these perceptions, along with chronic goals, beliefs, fears and current states, are apt to influence strategic action that leads to resisting or encouraging the use of safer sexual behaviors (Miller, Bettencourt, BeBro, & Hoffman, 1993). Thus, future campaigns need to take account of individuals' relationship goals and the emotional dynamics of sexual communication. Message strategies can also be designed into the campaigns to increase the social acceptability of condoms and social norms around their use.

The Roles of Campaigns

The significant differences found between the two waves of surveys regarding respondents' condom perception and willingness to use condoms may have to do with the nature of the campaign. In her meta-analytic overview of 48 media health campaigns, Snyder (2001) has shown that campaigns effects are stronger for adoption of a new behavior such as condom use than for cessation of current habits. Further, behavioral outcomes are more likely to occur if social-change strategies such enforcement are integrated into the campaigns. The 2004 World AIDS Day campaign in Taiwan is typical of this type. In addition to focused theme on promotion of condom use, new policies such as free HIV screening for pregnant women and availability of condoms in hotel rooms, as mentioned previously, were enforced simultaneously, which may have further facilitated the intended changes of individuals'

perceptions and behaviors of HIV/AIDS-related matters.

Another possible explanation for the above significant differences may be related to the message dissemination formats, particularly the unconventional public relations and entertainment-education strategies adopted in the Taiwanese 2004 World AIDS campaign. By embedding campaign materials into the programming in informational or entertaining style, these campaign formats could be more successful than the conventional PSA style in impressing the target individuals (Salmon & Atkin, 2003), which enabled audiences to seek further information for the intended attitudinal and behavioral changes.

Indeed, new public health media campaigns launched each year are often placed in a crowded media environment filled with messages from competing channels (Randolph & Viswanath, 2004). This was also true with the Taiwanese World AIDS Day Campaign, launched at a time when the media environment was saturated by the heated political campaigns for the legislative elections. Facing strong competition with media resources, especially advertising time and audiences' attention, the public relations messages may have advantages over prepackaged PSA or pamphlet formats in terms of source credibility. Health messages presented in entertainment programming may have attracted larger audiences and convey information in a relevant and credible manner (Salmon & Atkin, 2003). Future campaign designs could continue to develop more creative and non-conventional channels and formats for message dissemination.

Socio-demographic Differences

Results from the logistic regression analyses indicated that more efforts are needed to increase the awareness and behavioral intention of the less educated, older but still at-risk population. The insignificant effects found in the predictors of gender and marital status seemed to suggest that gender or matrimonial inequality found in many parts of the world is

not a serious problem to the Taiwanese locals. Nevertheless, such findings may be due to a balance, for example, between a variety of men's and women's perceived barriers to safer sex practices. This, again, points to the importance of segmenting the targeted groups when designing and implementing HIV/AIDS prevention campaigns.

Limitations of the Study

While a number of theoretical and methodological pitfalls may be found in the current investigation, the study would like to conclude the discussion by highlighting the following limitations that might affect collection and interpretation of the survey data.

First, when we compared the findings from the two survey data, we did not imply that the changes found were all due to the implementation of the 2004 World AIDS Day campaign in Taiwan. We need to acknowledge that by using a pre-/post-comparison design to collect survey data, there may be fluctuations in respondents' characteristics that accounted for differences in outcomes between the two surveys. Moreover, secular trends historical events, or other factors may have created the behavior change (Valente, 2001). Nevertheless, longitudinal studies conducted systematically and over a longer time frame are still considered crucial and recommended to observe and document the campaign effects.

Moreover, although the Taiwanese public has become less hesitant to talk about sex and HIV/AIDS, self reports of sexual attitudes and behavior with interviewers over the telephone may still involve issues of reliability. People do not always tell the truth when it comes to sex. They may hide some facts or brag about their sexual behavior without using precautions. Some people may be offended by inquiring and discussion about such a sensitive topic on the phone. People who completed the interviews may represent the type of individuals who are more open-minded.

In addition, to avoid respondents' rejection of the telephone survey, we have limited the number and the type of questions that could be asked within a relatively short period of time. It is acknowledged that the responses we obtained from the telephone interviews may differ from those obtained in a face-to-face or by a more open-ended question format. We also need to admit that acknowledge the single-item measures used in the study may limit the validity to some extent. However, this was a compromise we have to make when conducting nationwide telephone surveys with the hope to avoid high refusal rates.

Still, survey findings presented in the study have provided useful information in interpreting the trends of HIV/AIDS-related preventive perceptions and practices on the aggregated level. As a first endeavor to integrate research into HIV/AIDS media campaign design and implementation in Taiwan, the research results can also help examine the effectiveness of the campaign activities and uncover issues that need to be prioritized in future campaign design and implementation.

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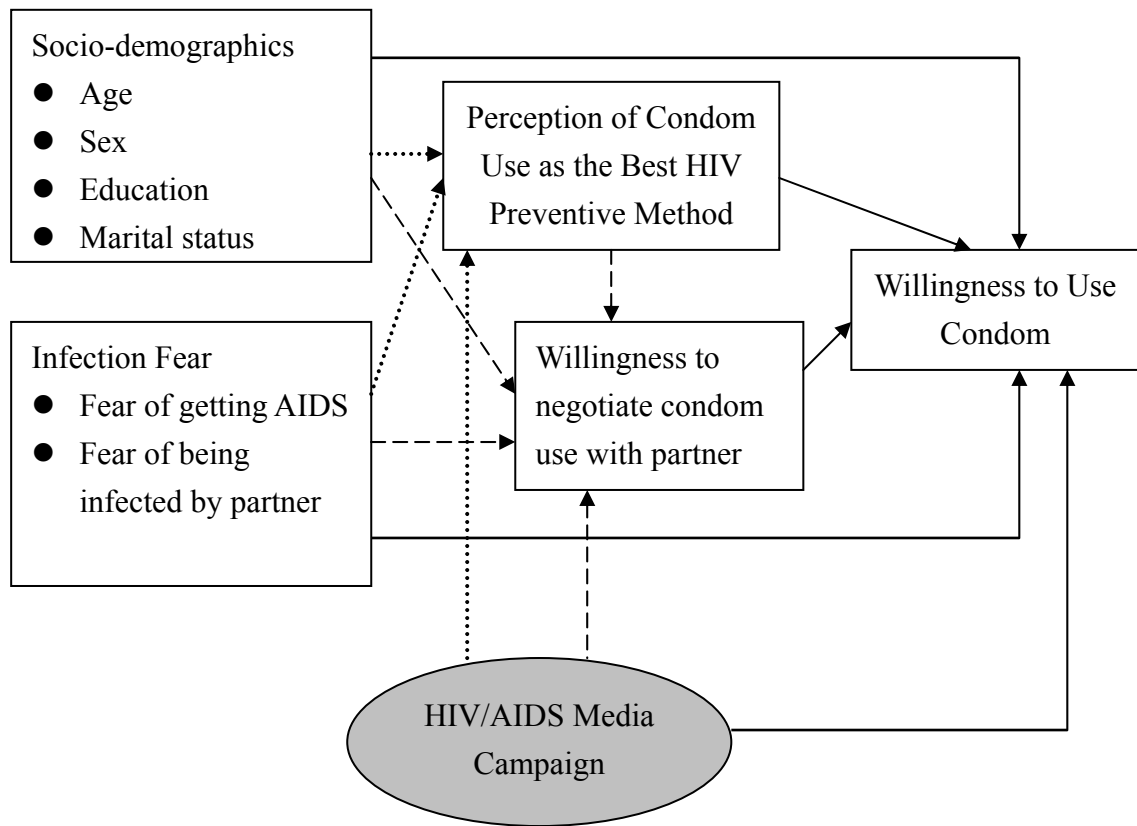


Figure 1. Logistic Regression Models to be Tested

Table 1. Distributions of respondents' socio-demographics (%)

Socio-demographics	Pre-campaign survey (N = 2,152)	Post-campaign survey (N = 2,142)
<u>Gender</u>		
Male	42.8	41.2
Female	57.2	58.8
		$(\chi^2 = 1.157, d.f. = 1, n.s.)$
<u>Marital status</u>		
Married	71.5	69.8
Other*	28.5	30.2
		$(\chi^2 = 1.510, d.f. = 1, n.s.)$
<u>Age</u>		
Under 20	2.7	3.6
20-24	8.8	8.9
25-29	9.4	8.9
30-34	10.7	9.9
35-39	12.8	11.5
40-44	17.3	15.8
45-49	12.5	11.1
50-59	19.1	22.4
60-65	6.6	8.0
		$(\chi^2 = 17.081, d.f. = 8, n.s.)$
<u>Education</u>		
Elementary school or less	11.6	13.5
Junior high school	11.1	11.7
Senior high school	36.8	35.9
University or above	40.4	38.9
		$(\chi^2 = 5.884, d.f. = 3, n.s.)$

*This category was combined with the other responses of ‘never married’, ‘divorced’ and ‘widowed’.

Table 2. Fear of HIV infection between pre-campaign and post-campaign surveys (%)

Variables	Pre-campaign survey (<i>N</i> = 2,099)	Post-campaign survey (<i>N</i> = 2,064)
<u>Fear of getting AIDS</u>		
Not at all worried	35.6	34.9
Not too worried	41.2	29.8
Don't know	1.2	1.0
Somehow worried	13.7	22.1
Worried very much	8.2	12.1
Total	100.0	100.0
$(\chi^2 = 95.503, d.f. = 4, p < .001)$		
<u>Fear of being infected by partner</u>		
Not at all worried	39.4	39.1
Not too worried	38.4	28.1
Don't know	2.8	2.8
Somehow worried	13.2	19.5
Worried very much	6.2	10.6
Total	100.0	100.0
$(\chi^2 = 82.435, d.f. = 4, p < .001)$		

Table 3. Gender differences in perceived functions of condom use between pre-campaign and post-campaign surveys (%)

Functions of Condom Use	Pre-campaign survey		Post-campaign survey	
	Men (<i>N</i> = 1,098)	Women (<i>N</i> = 1,055)	Men (<i>N</i> = 1,094)	Women (<i>N</i> = 1,048)
Preventing STDs	77.6	77.1	79.0	75.2
Contraceptives	76.7	77.4	72.9	71.2
Preventing AIDS	75.7	76.2	71.9	70.4
Protecting personal safety	69.4	74.0	65.4	70.2
Preventing cervical cancer	47.8	50.8	49.4	53.9
Seeking pleasure	36.3	28.9	26.0	21.9
Other	0.1	0.0	0.0	0.0
Don't know	6.9	7.5	3.4	6.7

Note: The total percentages of the column cells are over 100.0%, for plural responses were elicited to this question. Chi-square analysis was thus not performed here.

Table 4. Gender differences in barriers to condom use between pre-campaign and post-campaign surveys (%)

Reasons for not using condom	Pre-campaign survey		Post-campaign survey	
	Men (<i>N</i> = 347)	Women (<i>N</i> = 359)	Men (<i>N</i> = 313)	Women (<i>N</i> = 345)
Unnecessary	81.6	76.4	72.1	68.2
Not used to it	14.4	12.6	17.6	18.4
Planning pregnancy	1.9	3.9	5.7	2.2
Inconvenient	1.2	1.1	1.4	0.5
Unacceptable by Partner(s)	0.6	3.6	0.5	5.5
Other	2.1	2.1	2.9	2.5
Don't know	3.0	5.5	4.2	7.5

Note: Total percentages of the column cells are over 100.0%, for plural responses were elicited to this question. Chi-square analysis was thus not performed here.

Table 5. Logistic regression of condom perception, condom negotiation, and condom use for both surveys (N = 4,163)

	Perceived Best Method B (SE)	Condom Negotiation B (SE)	Condom Use B (SE)
Sex (M=1, F=0)	-.119 (.070)	-.046 (.066)	.032 (.070)
Marital status (married =1, else =0)	-.170 (.096)	-.086 (.092)	-.190 (.097)
Age ¹	-.068 (.021)**	-.079 (.020)***	-.158 (.021)***
Education			
Elementary school and below (reference)			
Junior high school	-.042 (.146)	.399 (.154)*	.285 (.156)
Senior high school	-.130 (.125)	.888 (.132)***	.472 (.134)***
College and above	-.145 (.128)	1.219 (.135)***	.850 (.137)***
Fear of getting AIDS ²	.071 (.030)*	.072 (.029)*	.031 (.030)
Fear of being infected by partners ²	.084 (.031)**	.081 (.030)**	.031 (.032)
Survey (1=post-campaign, 0=pre-campaign)	.750 (.069)***	.093 (.066)	.262 (.070)***
Perceived best method (condom=1, else=0)	--	.163 (.070)*	.600 (.074)***
Condom negotiation (yes =1, else =0)	--	--	1.037 (.070)***

Notes. 1. Age was measured by being grouped into the following nine ranges: below 20, 20-24, 25-29, 30-34, 35-39, 40-44, 45-49, 50-59, and 60-65.

2. Typical Likert scales were employed to measure the respondents' attitudes, with one point meaning "not at all worried" and five meaning "worried very much."

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

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