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## An Inoculation-Based Approach for Developing Efficacious Strategies for Resisting Cigarette Initiation among Chinese Male Youth

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**Abstract:** Tobacco-related deaths are increasingly becoming a public health challenge in China. Chinese men, 67% of them smoke, rarely quit tobacco use successfully. The priority of reducing smoking prevalence reasonably shifts to smoking prevention among Chinese male youth. As social smoking is a top reason for future addictive tobacco consumption, an inoculation-based intervention program is outlined to specifically enhance male teenagers' self-efficacy in resisting cigarette initiation. Systematic research procedures are detailed to generate culturally appropriate interpersonal strategies to resist cigarette initiation effectively. [China Media Research. 2010; 6(4):92-99]

**Keywords:** smoking initiation, resisting cigarettes, inoculation, smoking prevention, Chinese youth

### Literature Review

Holding the top place in its total tobacco consumption in the world, China faces a serious public health challenge due to prevalent cigarette smoking (Gu, Kelly, Wu., et al., 2009). According to the World Health Organization (2002), approximately 67% of men and a third of male teens smoke. With over 300 million smokers in China, approximately 3,000 people die everyday due to tobacco-related causes (World Health Organization, 2002). If the present trends continue, a total of two million tobacco related deaths among men will occur annually in China by 2025 (De Vries, 2007). Smoking is forecasted to claim a third of all current young Chinese men's lives within 30 years (The Epoch Times, 2004). The youngest smokers surveyed recently were 14 years old, 5 years younger than the youngest group surveyed in 1997; the percentage of young smokers has increased since 1997 (World Health Organization, 2002). Thus, China needs to focus its anti-smoking efforts on young people, particularly cigarette prevention among male youth.

Cigarette smoking is the largest preventable cause of premature mortality and morbidity in the world. For China, mass-produced cigarettes are a large source of revenue for Chinese government; however, public dissemination of information on the health effects of smoking has been very limited (Wang, Borland, & Whelan, 2005). The 1996 National Prevalence Survey in China showed that approximately only one out of every six smokers has actually tried to quit; further, merely a small percentage of the Chinese men have quit smoking *successfully*. The majority (83%) of current smokers do not indicate an interest in quitting (Chinese Academy of Preventive Medicine, 1997). The figures and evidence point to the fact that once men begin smoking, they are not likely to quit; which necessitates efforts in preventing smoking onset.

Globally, efforts to reduce tobacco use have shifted from a primary focus on cessation to more prevention-

based interventions during the past decade; preventing smoking onset has become the focus of many communication, education, and tobacco control programs (Williams, Clark, & Alley, 2006). China's urgent needs for tobacco use reduction, too, can mirror this global trend. China can learn valuable lessons from the abundance of research and documented successful tobacco intervention programs in the West. Further, to develop an effective and integrated intervention initiative for young Chinese men, one must take into consideration of the unique Chinese cultural, social, and psychological factors. Notably, one of the main causes for wide-spread smoking among Chinese men is directly attributable to cigarette initiation in social, collective settings (Sheer 2009). To that end, we propose a theory-based efficacious intervention approach to prevent smoking onset by targeting smoking initiation among Chinese male youth. Specifically, we first provide justifications for targeting Chinese male youth. Second, we highlight the unique cultural meanings associated with smoking among Chinese men and related social and psychological implications. Third, we identify inoculation, a proven effective smoking-preventive intervention approach in the West, as the guiding theory for developing smoking prevention strategies. Fourth, we provide tangible research guidelines for conceiving and developing strategies that cultivate and enhance Chinese male youth's self-efficacy in resisting cigarette initiation.

### *Chinese Male Youth as Target Population for Smoking Prevention*

The typical age for starting smoking among Chinese men falls in the range between 16 and 20 years old (Wang, Borland, & Whelan, 2005). This age range is much older than the conventional target population of intervention programs in Western countries, where early adolescence is the focus (Pfau, 1995; Porcellato, Dugill, Springett, & Sanderson, 1999). Gritz et al.

(1998) and Pfau, Van Bockern, and Kang (1992) observe that the transition from primary to middle school often accompanies deteriorating negative attitudes toward smoking, which can lead to tolerance of smoking by peers, experimental smoking, social smoking, and regular smoking. This transition period creates an indifference to health consequences of smoking among adolescents, which makes them more vulnerable to the influence of peer pressure to smoke (Friedman, Lichtenstein, & Biglan, 1985; Gottlieb & Baker, 1986).

In China, such transition period and critical stage come later in life as teenagers are graduating from high school. The reason why Chinese adolescents begin smoking later than their Western counterparts can be explained by their living arrangement and Chinese family values (Wen, Chen, Muscat, et al., 2007). For instance, the emphasized family value and small family size (due to one-child policy) may bring some positive influence into the development of Chinese adolescent behaviors, including tobacco use. Their smoking trials may quickly meet with parental objection, which likely inhibits early teenagers' smoking practices. The critical stage comes when adolescents leave their family and school to join workforce or to pursue a college degree. They begin to have more personal freedom and fewer authoritative sanctions from parents. When encountering social pressure to smoke, they are likely to oblige initially and form a habit later. Thus, unlike the majority of Western intervention programs, the prevention of smoking onset in China need to target older teens in high school. Male teenagers are targeted due to the steady increase in smoking incidence since 1998 (Punitha, 2008).

### ***Cultural Meaning of Smoking and Initiation***

Seldom lighting the first cigarette when alone, most Chinese men begin smoking upon initiation from teenage peers, colleagues, and friends. Traditionally, smoking is considered a macho act, as seen in published images of China's famous chain-smoking statesmen and military leaders such as Chairman Mao and Deng Xiao Ping. Cigarettes also are valued commodities in social ceremonies and functions such as weddings and funerals. Cigarettes, offered as a gesture of courtesy and respect, are used as a relaxing object to entertain or comfort guests. Rejecting offered cigarettes may be reckoned as turning down friendliness and respect, which can result in a sense of losing face for the cigarette giver. People, even non-smokers, feel obligated to accept such an offer to avoid violating social norms and to reserve the face of the initiator in a culture of collective orientation that emphasizes harmony and interdependency.

Among teenagers, peer influence and social smoking are the main reasons that drive them to smoke (Committee on Youth Smoking Prevention, 2010). In a study of 14, 434 Chinese adolescents, Guo, Unger, Azen,

et al. (2010) found that social image and social belonging were the two highly-ranked contributing factors to smoking at earlier stages, and more so for males than for females. Sheer (2009) concludes that interpersonal influence directly contributes to cigarette consumption among Chinese men, teenagers included. At the social level, smoking (often accompanied with drinking) creates a sense of social bonding that minimizes social distance and creates initial trust for future interactions. Resisting smoking initiation, therefore, can threaten the initiator's face and damage a burgeoning relationship. These social smoking phenomena challenge previous intervention strategies that target individuals' knowledge of health hazards and individual skills for quitting smoking. Self-efficacy for resisting interpersonal cigarette initiation, an uncharted research area in smoking prevention in China, must now be taken into account.

### ***Self-Efficacy for Resisting Cigarette Initiation***

Self-efficacy, the belief in one's ability to perform a certain task (Bandura, 1986), has been frequently documented as the most significant predictor of behavioral intentions and actual health behaviors (Fishbein, Hennessy, Yzer, & Douglas, 2003). Self-efficacy predicts cigarette consumption, and smoking onset and cessation (Dijkstra & De Vries, 2000; Prapavessis, Cameron, Baldi, et al., 2007). In the context of smoking resistance among Chinese male youth, self-efficacy is a matter of confidence in rejecting cigarette initiation without hurting the giver's face, the relationship with the giver, and one's social image. Cultivating and enhancing a male teenager's resisting self-efficacy requires the identification of barriers and dilemmas associated with smoking rejection and situation-appropriate communication. Research using Chinese male teenagers must be conducted to unearth those barriers, dilemmas, social smoking situations, and appropriate yet effective resisting strategies. Findings can serve as a basis for training programs designed to enhance self-efficacy for resisting cigarette initiation. Inoculation then provides theoretical rationale and systematic intervention methods to motivate and train young Chinese men to resist cigarette initiation. The skills teenagers acquire from training can enhance their self-efficacy and help them cope with cigarette initiation in the long term.

### ***Inoculation: The Guiding Theory***

Inoculation is a cognitive response model that exploits how active thinking can result in behavioral change. Inoculation theory, initiated by McGuire (1964, 1970), focuses on the processes used to enable people to become more resistant to persuasion and influence. Borrowing the idea of inoculation from biology, McGuire (1970) asserts that exposure to a weak dose of

opposition arguments, which are strong enough to stimulate the receiver's defensive thinking but not to overwhelm him/her, should produce the mental equivalence of antibodies--counterarguments. In essence, inoculation first introduces a threat to a person's belief system and then provides a method or ability for him/her to cope with the threat by refuting the counter-attitudinal message. Pfau, Van Bockern, and Kang (1992) found inoculation effective in promoting teenagers' resistance to smoking initiation, particularly among adolescents of low self-esteem, precisely those who are most at risk for smoking initiation.

Kremers, Mudde, and De Vires (2004) integrated the motivational stages of smoking acquisition and the behavioral stages of smoking and found that three out of four adolescents who had tried smoking in the past (but who were not smoking regularly at the time of study) were immotivated with regard to their future smoking behavior. In other words, 75% of the adolescents who behaviorally took up smoking initiation were unmotivated (i.e., not thinking) regarding smoking in the future. This indicates that adolescent smoking initiation or agreeing to it is not the result of a rational decision or plan.

The finding suggests that an adolescent is not yet determined to become a habitual smoker when he/she displays initial trial behavior of smoking. Inoculation then can induce thought processes negative to smoking. Further, the finding that smoking initiation occurs in a state of low involvement with no opportunity to deliberate points to the importance of preparing adolescents before a possible smoking habituation process. Thus, instilling a negative attitude toward smoking and preparing teenagers with a position and strategy of resisting smoking uptake before subjecting to cigarette initiation can become crucial. Then, forewarning male teenagers about possible future threats (i.e., being offered cigarettes), inducing counter-attitudinal thinking (i.e., rejecting initiations), and then actually resisting cigarette initiation successfully in the future should be the guiding principle in inoculation-based intervention programs.

#### ***Inoculation and Communication Intervention***

An inoculation process typically requires at least two sequential messages: a description of the threat and refutational preemption (Pfau, 1995). The threat often is a realistic situation that may or may not cause individuals to experience anxiety initially. In the current context of smoking prevention, the threat is cigarette initiation. Realistic threat situations can be smoking-initiating communications such as "Come on, everybody smokes here" or "Here you go, have some fun." Such pressure from the initiator can cause anxiety to non-smoking-leaning teenagers, but unlikely so for nonchalant or smoking-curious ones. Inoculation alerts

teenagers of consequences, problems of catering to or tolerating the threat (i.e., complying with smoking initiation) by providing a preemptive refutation before teenagers are exposed to such likely initiations in the future.

Refutational preemption consists of arguments and reasoning against smoking initiation via two parts. The first part contains "bad influence," initiation temptations telling teenagers why smoking is wonderful (e.g., being cool). The second part is refutation that builds counterarguments, those that counter the "bad influence." Examples of counterarguments include "Smoking may be cool at the time, but your stained teeth and foul smell will keep girls away from you" or "Real cool guys do not smoke." Such refutational preemption is intended to change the nonchalant or cigarette-tolerating/favoring attitudes toward smoking aversion. In order to strengthen inoculation effects, follow-up information reinforcing the refutation can be used to engage teenagers to carefully think the merit of the refutations.

#### **An Inoculation-Guided, Research-Based Smoking Prevention Program**

Developing effective health intervention strategies must use a theory-grounded and research-based approach (Maibach & Parrott, 1995). We adopt inoculation as our guiding theory. Our literature search reveals that smoking prevention in China rarely applies the inoculation framework. Consequently, we need to start from scratch in designing an inoculation-guided smoking prevention program for Chinese male youth. Specifically, we must address the following questions:

- Q1. What are the situations in which smoking initiation occurs, including who the initiators are?
- Q2. What types of appeals (i.e., "bad influence") are used for initiation in various situations?
- Q3. What are the psychological, social, cultural barriers for resisting smoking initiation?
- Q4. What strategies for resisting cigarette initiation are effective?
- Q5. Are these resisting strategies culturally appropriate?
- Q6. What refutations against initiation appeals are effective?

The process of answering these six questions constitutes "formative research." Our formative research consists of three focus group studies. Study 1 addresses Questions 1-3, Study 2 for Questions 4 and 5, and Study 3 for Question 6. On the basis of the findings from Study 1 and Study 3, inoculation intervention strategies are formulated and made into video segments to motivate male teenagers to generate counterarguments against smoking. Findings from Study 1 and Study 2 serve as the basis for effective cigarette-resisting skills training as inoculation reinforcement. Then experimental

implementation is executed. Finally, summative (i.e., evaluative) research is conducted to test the degree to which male teenagers' self-efficacy for resisting cigarette initiation has been enhanced and they have successfully resisted such initiations. China's big cities are targeted initially due to reported high male teenage smoking incidence (Punitha, 2008). After summative research, a further improved inoculation program is ready for national implementation.

### **Formative Research: Study 1**

The goal of this study is to uncover 1) situations in which smoking initiation occurs, including who the initiators are, 2) the types of appeals used by cigarette givers, and 3) psychological, social, and cultural barriers. To that end, a focus group study is conducted. Focus group research can be particularly useful in identifying both diverse individual accounts and prevailing social factors which influence and constrain actions (Gough, Fry, Grogan, & Conner, 2009).

*Sample and procedure.* Ten focus groups of 8 are planned. Via the school system in a big city, ten high schools with highest reported smoking incidence are identified. With approval from the City Education Bureau, a master screening survey to all male students at the ten schools identifies a pool of eligible participants who have accepted cigarettes given by others, have given cigarettes to others, and/or have seen others initiate smoking. The master screening survey contains other questions used for participant selection for Study 2 and Study 3 as well. A total of 80 male teens are randomly chosen from the eligible male participant pool after the screening procedure. Then they are

randomly assigned to 10 groups with equal number in each group. Focus group discussions are conducted by trained moderators, with whom participants do not have previous relationships. Discussions are video-taped for data analysis.

*Discussion protocol.* A protocol is designed for moderators to conduct focus group discussions consistently. The protocol consists of a series of main questions, contingency questions, and follow-up questions in order to solicit participants' experiences and views regarding smoking initiation and related situational, social, and cultural factors. A moderator opens each session by introducing topics, encouraging participation, and ensuring that there are no correct/incorrect comments. He/She then prompts participants to recall smoking initiation experiences they have encountered or witnessed. The moderator continues to ask the main questions related to the time, location, and process of the encounter, the nature of the relationship between the initiator and the receiver, the persuasive argument made by the initiator, and the response from the receiver. Participants are encouraged to discuss reasons why they felt pressured to accept or reluctant to reject the offer. If participants provide some superficial responses such as "I just did not know how to say no," the moderator should probe for more detailed information in terms of the nature of the struggle. In an attempt to better understand the nature of dilemmas involved in such interactions, contingency and follow-up questions should be used when the moderator sees appropriate. Sample focus group questions for moderators in each discussion area are listed below (Table 1).

Table 1. *Sample Focus Group Questions*

Main Questions	Contingency Questions	Follow-Up Questions
Q1 Where did this encounter occur? Was it in a public or private venue? Who was the cigarette giver? How old were you at the time?	Would the result be different if you were not with a group of friends? If you had known the cigarette giver for a long time, would be it easier to say no?	How would you describe such an experience? How did you feel at the time when you were put on the spot?
Q2 What did he say when offering the cigarette? What did he say to pressure you? What was the part he said that really tempted you? How did you feel about his argument?	Would the situation be different if he ridiculed you? Would the result be different if he was not so insistent?	What was his reaction when you hesitated? What thoughts were going through your mind when you were cornered?
Q3 Why couldn't you just say no? How would you describe your struggle? What was on your mind when you hesitated? How would you describe your ability to or confidence in resisting smoking initiation?	What would have happened if you said no? Would you have said no if you knew how to say the lines appropriately to avoid smoking so that he would not be offended?	What was the initiator's reaction? Did he say anything? Why did you think that the initiator was so insistent?

*Thematic Analysis.* To identify the recurring and salient themes, thematic analysis using strategies from grounded theory (Glaser & Strauss, 1967) is employed. A concerted effort is made to remain open to unexpected themes and to constantly refine and validate emerging insights. We will begin with detailed, systematic, and line-by-line coding, and modify the coding scheme as necessary. This process is likely to generate a myriad of themes, which are allocated to theme clusters for developing various categories for coding. For example, the initiator, in an attempt to gain compliance, may use different persuasive arguments by challenging the receiver's negative face (e.g., "Are you a man?" or "Too chickened to try something cool?"). Such themes will be allocated into the same cluster under a possible category of "ridicule" appeal. Categories related to different questions under study will be sorted accordingly and systematically to shed light on the nature, situation, process, and strategy of smoking initiation.

### **Formative Research: Study 2**

The goal of Study 2 is to discover effective cigarette-resisting strategies that are appropriate to specific cultural contexts. Cigarette initiation situations and accompanying appeals emerge in Study 1 serve as the basis for Study 2. The research design for Study 2 entails two stages: generating smoking resisting strategies and pilot-testing the effectiveness and appropriateness of generated strategies.

*Sample and procedure.* For cigarette-resisting strategy generation in Stage I, eligible participants are those who have resisted cigarette initiation successfully and unsuccessfully. They are chosen with the same master screening survey described in Study 1 procedures. Excluding Study 1 participants, sixty-four participants are randomly selected and assigned to 8 focus groups of 8 to share their experiences specifically in resisting cigarette offers. A typology of resisting strategies is then created.

In Stage II of strategy evaluation, the master screening survey creates a pool of eligible participants who have initiated cigarettes to others, after participants in Study 1 and Stage I of Study 2 are excluded. Sixty-four male teenagers are randomly chosen from the pool and randomly assigned to 8 focus groups of 8. Their task is to evaluate various cigarette resisting strategies (i.e., the typology emerged in Stage I) in terms of appropriateness and effectiveness in realistic situations (also emerged in Study 1). Effective and appropriate resisting strategies will be featured in self-efficacy training programs that reinforce inoculation.

*Discussion protocol for Stage I.* A protocol similar to what is used in Study 1 is administered. A moderator prompts participants to recall their successful and unsuccessful experiences in resisting cigarette offers.

Participants are encouraged to provide detailed information about those experiences, including the situation, the characteristics of encounter, people involved, and specific resisting strategies and arguments used.

*Analysis for Stage I.* The specific accounts about cigarette resisting encounters generated from the focus groups are subsequently analyzed for the purpose of discovering effective elements that contribute to successful resistance. A typology of successful resisting strategies is developed to facilitate discussions in Stage II.

*Discussion protocol for Stage II.* All participants are given a booklet of the typology of resisting strategies. A moderator prompts them with various smoking initiation situations and asks participants to discuss which type of strategies is effective and appropriate to these situations. Participants are encouraged to fully express their assessments and concerns and discuss these views among themselves with minimal input from the moderator. Strengths and weakness of each type of resisting strategies and the relevant contextual constraints are identified by the participants.

*Analysis for Stage II.* The researchers assign ratings to each type of resisting strategies after they consider its strengths, weaknesses, and contextual constraints. Subsequently, recommendations are made by matching the most effective resisting strategies with appropriate situations containing cigarette initiation.

### **Formative Research: Study 3**

Findings from Study 1 provide realistic situations in which cigarettes are given (often accompanied with initiation appeals) and then are taken. The key concern for Study 3 is to develop effective refutations against emerged initiation appeals, which will serve as the basis for inoculation video segments.

*Sample and procedure.* Eight focus groups of 8 are planned for in-depth discussions of preemptive refutations. From the same ten high schools, sixty-four students who participate in neither Study 1 nor Study 2 are randomly selected and assigned to 8 groups. As refutation is preemptive thinking in the inoculation process, two days prior to group discussions, all participants are asked to complete a questionnaire that prepares them to think through possible refutations carefully. Cigarette initiation appeals in realistic situations, which emerge in Study 1, are given in the questionnaire. Participants then are asked to write down a detailed refutation for each appeal. Refutation is explained to respondents as "a description of what is wrong" with a particular smoking initiation appeal. Completed questionnaires are collected and analyzed during the next two days. For each appeal, refutations, judged to be effective by experts, are summarized

succinctly for contingent questioning in case participants forget to mention them in group discussions. Two days later, focus group discussions are conducted by trained moderators. Discussants are once again asked to provide refutations, comments, evaluations, improvements, and other input is sought as well. Discussions are video-recorded for data analysis.

*Discussion protocol.* A protocol similar to the ones employed in the first two studies is adopted in Study 3. The moderator prompts participants with various types of initiation appeals and asks participants to provide corresponding refutations. The effectiveness of refutations are evaluated and discussed by participants with minimal input from the moderator. Participants are encouraged to identify possible limitations of each refutation and ways to strengthen the refutation.

*Analysis.* Effective refutations are identified in correspondence with initiation appeals. Each refutation is marked with strengths, weaknesses, ways of improvements, and application concerns. Selected refutations are modified and/or fine-tuned in order to be featured in inoculation video segments for optimal effects.

#### ***Intervention: Inoculation-Guided Video Messages and Skills Training***

Based on the findings from the formative research, video segments are produced for inoculation-based intervention. These messages are tested; then improvements are made before implementation (to be approved by the government). In implementation, target audiences are exposed to inoculation messages first, which serves to motivate male teenagers for later resistance; then they watch reinforcement training video aimed at enhancing their self-efficacy for resisting cigarette initiation in real situations.

*Inoculation video segments.* Each complete inoculation video recording portrays a realistic smoking initiation situation, a refutation of the initiation by a male teenager with a voice over the identical text on the screen, asking viewers not to accept cigarettes. Several recordings are made for typical smoking initiation situations and corresponding refutations, which emerge in Study 1 and Study 3.

*Reinforcement training video segments.* Reinforcing video footage contains strategies for resisting smoking initiation that are appropriate and effective in various situations. These video segments, developed based on findings from Study 1 and Study 2, are a part of a training program. The video segments provide audiences with not only cognitive preparedness for similar encounters in the future but behavioral models regarding how to resist smoking initiation in those situations as well. The researchers develop a training program by incorporating other instructional techniques such as role play, discussion, and essay writing for

stronger, longer-lasting inoculation effects. These techniques exemplify the elements of the inoculation method, that bolster early refutations against cigarette initiation (see Pfau, 1997).

*Production testing.* Before implementation, all intervention strategies are theater-tested. One hundred members of the target audience gather in a small theater to watch prototype video segments, and then complete a questionnaire that examines their attention, video comprehensibility, relevance, realism, and persuasiveness. Three focus groups of 6 are randomly selected from these 100 people. Focus group participants give feedback on weaknesses and strengths, discuss possible ways to improve the video segments, and are solicited for sensitive or controversial elements, if necessary (see Atkin & Freimuth, 2001). The training package is experimented first in a classroom at a participating high school. Feedback is obtained for improvements. The testing process may run a few rounds until no problems or errors appear in the video segments and the training package, at which point the total inoculation program is ready for experimental implementation.

#### ***Experimental Implementation***

Prior to national implementation, experimental implementation is needed to provide an opportunity for ascertaining the effectiveness of the inoculation program. A project of this nature in health communication and intervention is likely to gain approval from local, provincial, and national government organizations that have a track record of supporting other public health promotion projects. Experimental implementation is executed in the same big city--upon approval from the city government. With all high schools in that city as the sampling frame, 24 high schools other than those included in formative research are system-randomly selected and assigned to either the treatment group or the control group, producing 12 schools in each group. For the schools in the treatment group, all male students watch the inoculation video segments once per week for two weeks during the weekly school-wide broadcasting period in the middle of the school year. Then for the next two weeks, the reinforcement training program is administered during physical education class or whatever slot the schools keep available. The schools in the control group receive no intervention.

#### ***Summative Research***

Summative research tests the effects of the experimental implementation over a period of six months. The key effects are measured by self-reported levels of self-efficacy for resisting smoking initiation in various situations, actual number of times of successful cigarette rejection, smoking status, cigarette consumption and behavior, tolerance for others' smoking behaviors (including parents, teachers, siblings

and peers, and strangers), intention to stay tobacco-free, and likelihood and actual action of persuading others to quit smoking. Data collection regarding the key effects are conducted at all 24 schools three times during the six-month period: immediately before the experimental implementation to establish baseline data, by the end of the third month, and by the end of the sixth month.

Attitudinal and behavioral differences between the two groups are compared to assess the effectiveness of the inoculation program at the end of the third month. The data from the-end-of-the-third-month are compared to the baseline so as to test possible history effect that might confound the inoculation treatment. If history effect does exist, then additional statistical procedures are performed to filter out the history effect. Further, data collected by the end of the sixth month are used to test the sustainability of the inoculation effects. We hypothesize that if our inoculation program, in fact, successfully cultivates and enhances self-efficacy for resisting smoking, then self-efficacy, a form of individual confidence and capability, should demonstrate an enduring quality.

Findings from summative research provide insight into further improving the inoculation program, which can then be implemented nation-wide. Summative research findings, too, provide directions for tailoring to audiences other than male teenagers.

### Conclusion

Our goal is to propose an inoculation-based approach for developing efficacious strategies for resisting cigarette initiation among young Chinese males. Having considered the unique cultural, social, and psychological implications of smoking in the Chinese context and taking into account the important role of self-efficacy, we argue that inoculation offers a set of potentially effective techniques that help Chinese young males resist tempting cigarette offers. Produced video segments have the potential for being adapted to PSAs. Our detailed research guidelines for conceiving, developing, and testing the resisting strategies can be followed for tangible execution. With available funding, we believe our inoculation program can become reality.

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### References

Atkin, C. K., & Freimuth, V. S. (2001). Formative evaluation research in campaign design. In R. E. Rice and C. K. Atkin (Eds.), *Public Communication Campaign* (pp. 125-145). Thousand Oaks, CA: Sage.

- Bandura, A. (1986). *Social foundation of thoughts and action: A social cognitive theory*. Englewood Cliffs, NJ: Prentice Hall.
- Chinese Academy of Preventive Medicine (1997). *Smoking and health in China: 1996 national prevalence survey of smoking pattern*. Beijing: Press of Science and Technology.
- Committee on Youth Smoking Prevention (2010). *Statistics and circumstance for youth smoking in Hong Kong*. Retrieved April 24, 2010 from <http://www.ysp.org.hk/eng/factsheet.asp>
- De Vries, H. (2007). Comments on "modifiable family and school environment factors associated with smoking status among adolescents in Guangzhou, China." *Preventive Medicine, 45*, 119-120.
- Dijkstra, A., & De Vries, H. (2000). Self-efficacy expectations with regard to different tasks in smoking cessation. *Psychology & Health, 15*, 501-511.
- Fishbein, M., Hennessy, M., Yzer, M., & Douglas, J. (2003). Can we explain why some people do and some people do not act on their intentions? *Psychology of Health and Medicine, 8*, 3-18.
- Friedman, L. S., Lichtenstein, E., & Biglan, A. (1985). Smoking onset among teens: An empirical analysis of initial situations. *Addictive Behaviors, 10*, 1-13.
- Glaser, B., & Strauss, A. (1967). *The discovery of grounded theory*. New York: Aldine.
- Gottlieb, N., & Backer, J. (1986). The relative influence of health beliefs, parental and peer behaviors and exercise program participation on smoking, alcohol use and physical activity. *Social Science and Medicine, 22*, 915-927.
- Gough, B., Fry, G., Grogan, S., & Conner, M. (2009). Why do young adult smokers continue to smoke despite the health risk? A focus group study. *Psychology and Health, 24*, 203-220.
- Gritz, E. R., Prokhorov, A. V., Hudmon, K. S., Chamberlain, R. M., Taylor, W. C., DiClemente, C. C., et al. (1998). Cigarette smoking in a multiethnic population of youth: Methods and baseline findings. *Preventive Medicine, 27*, 365-384.
- Gu, D. F., Kelly, T. N., Wu, X. G. et al. (2009). Mortality Attributable to Smoking in China. *New England Journal, 360*, 150-159.
- Guo, Q., Unger, J. B., Azen, S. P., Li, C. Y., Spruijt-Metz, D., Palmer, P. H., Chou, C. H., Lee, L. M., Sun, P., Johnson, C. A. (2010). Cognitive attributions for smoking among adolescents in China. *Addictive Behaviors, 35*, 95-101
- Kremers, S. P. J., Mudde, A. N., & De Vries, N. K. (2004). Model of unmotivated smoking initiation of children and adolescents (MUSICA): An integrated stage model of smoking behavior. *Preventive Medicine, 38*, 643-651.
- Maibach, E., & Parrott, R. L. (Eds.) (1995). *Designing*

- health messages: *Approaches from communication theory and public health practice*. Thousand Oaks, CA: Sage.
- McGuire, W. J. (1964). Inducing resistance to persuasion: Some contemporary approaches. In L. Berkowitz (Ed.), *Advances in experimental social psychology* (Vol. 1, pp. 191-229). New York: Academic.
- McGuire, W. J. (1970). A vaccine for brainwash. *Psychology Today, February*, 36-39, 63-64.
- Pfau, M. (1995). Designing messages for behavioral inoculation. In E. Maiback & R. L. Parrott (Eds.) *Designing health messages: Approaches from communication theory and public health practice* (pp. 99-113). Thousand Oaks, CA: Sage.
- Pfau, M. (1997). The inoculation model of resistance to influence. In G. A. Barnett & F. J. Boster (Eds.), *Progress in communication sciences* (Vol. 13, pp. 133-171). Greenwich, CT: Ablex.
- Pfau, M., Van Bockern, S., & Kang, J. G. (1992). Use of inoculation to promote resistance to smoking initiation among adolescents. *Communication Monographs*, 59, 213-230.
- Porcellato, L., Dugdill, L., Springett, J., & Sanderson, F. H. (1999). Primary schoolchildren's perception of smoking: Implications for health education. *Health Education Research: Theory and Practice*, 14, 71-83.
- Prapavessis, H., Cameron, L., Baldi, J. C., Robinson, S., Borrie, K., Harper, T., & Grove, J. R. (2007). The effects of exercise and nicotine replacement therapy on smoking rates in women. *Addictive Behaviors*, 32, 1416-1432.
- Punitha, H. (2008). The ever-increasing teenage smokers population in China. *Alcohol & Drug Abuse News*. Retrieved May 27, 2010 from <http://www.medindia.net/news/The-Everincreasing-Teenage-Smokers-Population-in-China--37483-1.htm>
- Sheer, V. C. (2009) Risk factors for smoking among men in the People's Republic of China: Implications for communication intervention. In Ma, R. (Ed.) *Health communication and public health* (pp. 109-138). Hong Kong: Hong Kong Educational Publishing.
- The Epoch Times (2004). Survey shows 35 million smokers in China. Retrieved March 14, 2010 from <http://www.asianresearch.org/articles/2141.html>
- Wang, S. H. Q., Borland, R., & Whelan, A. (2005). Determinants of intention to quit: Confirmation and extension of western theories in male Chinese smokers. *Psychology and Health*, 20, 35-51.
- Wen, X., Chen, W., Muscat, J. E., Qian, Z., Lu, C., Zhang, C. et al. (2007). Modifiable family and school environmental factors associated with smoking status among adolescents in Guangzhou, China. *Preventive Medicine*, 45, 189-197.
- Williams, C., Clark, J., & Alley, K. (2006). Identifying and eliminating tobacco-related disparities. *American Journal of Health Education*, 37, 51-55.
- World Health Organization (2002). Fact sheet: Smoking statistics western pacific. Retrieved December 23, 2009 from [http://www.wpro.who.int/media\\_centre/fact-sheets/fs\\_20020528.htm](http://www.wpro.who.int/media_centre/fact-sheets/fs_20020528.htm)

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