

**SUSCEPTIBILITY TO SMOKING AMONG
CHINESE-CANADIAN NON-SMOKING ADOLESCENTS**

by

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Abstract

Susceptibility to smoking has been widely measured in an effort to detect those teens who lack of a firm commitment to not smoke. This measure, however, has not been applied to Chinese-Canadian adolescents. The overall goal of this study was to understand susceptibility to smoking among Chinese-Canadian non-smoking teens. The dissertation includes three papers, each of which has addressed one of the three primary aims of this study.

The first paper aims to document the prevalence of susceptibility to smoking among a sample of non-smoking teens in British Columbia, Canada, and to examine the factors that explain the variation in susceptibility to smoking. I employed a quantitative secondary analysis of data from the BC Youth Survey of Smoking and Health. More than one quarter of the respondents were found to be susceptible. The Chinese-Canadian adolescents appeared to have a similar rate of susceptibility to smoking as their White/Caucasian counterparts, even though the smoking prevalence was lower among Chinese-Canadian group than in White/Caucasian group.

In the second paper, I explored non-smoking Chinese-Canadian adolescents' views about the protective factors and the risk factors that might lead them to be susceptible to smoking. In this paper I report an analysis of four qualitative focus groups which included 24 Chinese-Canadian participants. Negative attitudes toward smoking, befriending non-smoking teens, being peer pressured not to smoke and a collectivist cultural perspective were identified as protectors that helped Chinese Canadian teens remain tobacco free in their adolescence. The teens argued that authoritarian parenting had both positive and negative effects on Chinese teens' susceptibility to

smoking. These findings enhanced our understanding of the role that an ethnic group's culture might play in adolescent smoking.

In the third paper, I use Chinese-Canadian teens' perspectives to reconsider the operationalization of the measure of susceptibility to smoking. Avoiding absolute answers was viewed by the participants as a unique cultural style among Chinese-Canadian teens. They also commented on the ambiguity of using the term "smoking" in the smoking susceptibility measure. Further research is needed to gain a better understanding of the operationalization of the measure in this cultural group.

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Co-Authorship Statement

Chapter 2 is a version of a paper that has been published in *Public Health Nursing*. The paper was co-authored with Drs. Joan Bottorff, Joy Johnson, Elizabeth Saewyc and Bruno Zumbo.

Both Chapter 3 and Chapter 4 are versions of papers that will be submitted for publication. They were co-authored with Drs. Joy Johnson and Joan Bottorff. This statement acknowledges the role of the authors in the creation of the three manuscripts.

The research questions and the research designs were developed collaboratively by Weihong Chen, Dr. Joan Bottorff, and Dr. Joy Johnson. The literature review, data collection and data analyses for all three papers were performed by Weihong Chen with guidance, supervision and suggestions from Drs. Joy Johnson and Joan Bottorff.

The manuscripts were written by Weihong Chen. Drs. Joy Johnson and Joan Bottorff had a major role in providing suggestions, feedback and editorial input to all three manuscripts. Drs. Elizabeth Saewyc and Bruno Zumbo were involved in the preparation of the first manuscript by reviewing the manuscript and providing substantive feedback and suggestions. They also reviewed the last two manuscripts and provided feedback on the entire dissertation.

Chapter I

Introduction and Literature Review

For many young people, adolescence is a stressful period of transition into adulthood characterized by hormonal, physical, emotional and cognitive changes (Alloy, Zhu, & Abramson, 2003). The onset of adolescence is associated with a high prevalence and high intensity of a wide range of risk behaviours. Cigarette smoking is one of them (Beyth-Marom & Fischhoff, 1997). It is well known that cigarette smoking is the single most preventable cause of premature death (Center for Disease Control and Prevention, 2006). Most adult smokers start smoking regularly before the age of 18. Young smokers have more respiratory infections, more stress on their hearts, are less fit, have a higher risk of strokes, and the younger they are when they start smoking the younger they are in developing heart disease. They also have a greater risk of lung cancer (Higgins & Conner, 2003). Despite these well-established consequences of smoking, initiation rates among youth remain high in Canada and other areas of the world. According to the latest results from the Canadian Tobacco Use Monitoring Survey, 15% of the youth 15-19 years reported smoking cigarettes, either daily or occasionally (Health Canada, 2008). While the prevalence of cigarette smoking among Canadian adolescents has been declining in recent years, youth smoking is still widely recognized as a significant public health problem, such that its reduction remains a national priority.

There are two basic approaches to dealing with youth's cigarette smoking - smoking prevention and smoking cessation. The principle underlying the preventive approach is to

prevent or impede youth from initiating tobacco use. Strategies to prevent the uptake of smoking are particularly important for adolescents because experimentation with cigarettes and the development of regular smoking typically occur during adolescence. Almost 90% of smokers in the US had tried their first cigarette by age 18, and 71% of adult daily smokers had become regular smokers before they were 19 years old (US Department of Health and Human Services, 1994). Over one in six young smokers begin regular smoking by the eighth grade. Over one third of youth who ever try a cigarette become daily smokers (Centers for Disease Control and Prevention, 1997). Youths who smoke only a few cigarettes during adolescence are twice as likely to become adult smokers as youths who do not (Chassin, Presson, Sherman, & Edwards, 1992). Given these statistics, it is clear that adolescence, as the risk period for smoking uptake, is the key period for prevention efforts.

The essence of smoking prevention among adolescents is to prevent teens from taking up cigarettes. The development of strategies for assessing a propensity to engage in smoking behaviour is of great public health importance (Aklin, Lejuez, Zvolensky, Lahler, & Gwadz, 2005). One strategy that was introduced by Pierce and colleagues (1995) is to examine susceptibility to smoking among adolescent non-smokers. Susceptibility to smoking is a concept used to describe a person who is cognitively predisposed to smoke, as indicated by lack of a firm commitment not to smoke in the future (Pierce, Farkas, Evans, & Gilpin, 1995). Most young children intend never to smoke. However, as they enter adolescence, they may begin to entertain the possibility that they may smoke sometime in the future. When presented with the opportunity to smoke, they may no longer respond with an automatic “no”; instead, they may reconsider new

information about the acceptability of smoking and the expected consequences of smoking, thereby leaving them more cognitively predisposed to smoke (Unger, Rohrbach, Howard-Pitney, Ritt-Olson, & Mouttapa, 2001). Among the non-smoker population, those susceptible to smoking are in an early step in a sequence of cognitive changes that may result in experimentation with cigarettes, regular smoking, or addiction to tobacco. One way to prevent or delay smoking initiation is to interrupt the emergence of this susceptibility to smoking among non-smoking youth (Leatherdale, McDonald, Cameron, Jolin, & Brown, 2006).

Since it was introduced in 1995, the concept of susceptibility to smoking has been increasingly used in research studies that target smoking prevention among adolescents. Findings of these studies expand our knowledge on the topic of susceptibility to smoking. A literature review of smoking susceptibility among youth non-smokers was conducted with three aims: (1) to understand adolescent non-smokers, and their risk for future smoking behaviours; (2) to summarize what we now know about susceptibility to smoking among adolescent non-smokers, including its prevalence, its validity in predicting adolescents' future smoking uptake, and its predictors; and (3) to identify areas that require attention and further investigation to increase knowledge about adolescents' susceptibility to smoking. Prior to presenting the findings of the literature review, I will first provide some background knowledge of how the term *adolescent non-smokers* has been defined in literature and the conceptualization and operationalization of the concept of susceptibility to smoking.

Background Literature

Adolescent non-smokers: Who are they?

Smoking prevention strategies typically target those who are not smokers. However, there is not a consistent definition of non-smokers in literature. When the empirical literature related to susceptibility to smoking among non-smokers is considered, there is a need to first clarify who non-smokers are. Non-smokers are frequently treated as equivalent to never-smokers in smoking related research. These two terms are often used interchangeably by many authors (e.g., Leatherdale, McDonald, Cameron, Jolin, & Brown, 2006; Morbidity & Mortality Weekly Report [MMWR], 2006). Before one attempts to define who are adolescent non-smokers, it is helpful to first have a better understanding of the smoking uptake process in youth, because the stage of smoking uptake process is often used by researchers to determine whether a teen is a non-smoker.

The process of becoming a smoker has been conceptualized as involving several stages. Leventhal and Cleary (1980) suggested a four-stage process which includes preparation, initiation, becoming a smoker, and maintenance of smoking. Their work was elaborated by Flay (1993), who proposed a five-stage smoking uptake process - preparation, initiation, experimentation, regular use, and addiction. Flay's stage model was summarized in the 1994 Surgeon General's Report (USDHHS, 1994), and has provided the theoretical framework for a number of studies (e.g., Choi, Farkas, Pierce, Berry, & Gilpin, 1997; Flay, Phil, Hu, & Richardson, 1998; Kassel, Stroud, & Paronis, 2003; Jackson, 1998). Building on Flay's stage model of smoking uptake, other scholars have recommended adding a stage of precontemplation

as the beginning phase of the smoking uptake process (Stern, Prochaska, & Velicer, 1987). In so doing, all of the adolescents, even those who probably have never thought about smoking, are included in the developmental process of smoking.

The description that follows is a composite of the stage models of smoking uptake compiled by Mayhew, Flay and Mott (2000) and Wakefield and colleagues (Wakefield, Kloska, O'Malley, Johnson, Chaloupka, Pierce, et al., 2004). The stages include: (1) Precontemplation stage: Adolescents in this stage have never smoked and have no desire to do so; (2) Preparatory stage: This stage occurs when adolescents begin to think about smoking and start to form knowledge, beliefs and expectations about smoking and its functions; (3) Initiation stage: This stage is generally understood to occur when adolescents have tried their first few cigarettes; (4) Experimental stage: This stage is characterised by repeated but irregular use of cigarettes, with a gradual increase in the frequency of smoking and an increase in the variety of situations in which cigarettes are used; (5) Regular smoking stage: In this stage, adolescents progress to smoking on a more regular, albeit still infrequent, basis. While cigarettes are not smoked everyday, there is more consistency in the types of situations in which smoking will occur, such as at parties, on weekends or after school; and (6) Established smoking stage: Adolescents in this stage are smoking daily or almost everyday, and are generally presumed to have become nicotine dependence.

When defining non-smokers, some researchers (e.g., Kremers, DeVries, Mudde, & Candel, 2004; Rubinstein, Halpern-Felsher, Thompson, & Millstein, 2003) only include those who have never smoked, not even one puff. Others, however, disagree with this strict definition. They

argue that based on the stage model of smoking uptake, it is possible for someone to have tried smoking or experimented with cigarettes and still be considered a non-smoker (Dunn, 1998). Accordingly, some researchers have conducted studies on adolescent smoking in which non-smokers were operationally defined as never smokers as well as triers or experimenters (Botvin, Botvin, Baker, Dusenbury, & Goldberg, 1992; Chassin, Presson, Sherman, Corty, & Olshavsky, 1984; Dunn, 1998; Gittelsohn, Roche, Alexander, & Tassler, 2001; Huang, Hollis, Polen, Lapidus, & Austin, 2005). The claim that the classification of non-smokers should not be limited to never smokers is supported by anecdotal evidence and research studies. Flay et al. (1998) observed that while some adolescents developed a habit of regular smoking, others remained non-smokers, and never advanced beyond trying and experimenting. Studies also show that 80-90% of youngsters have tried at least one cigarette, yet the proportion of adolescents who become regular smokers rarely exceeds 50% of those who try (Leventhal & Cleary, 1980). Furthermore, adolescents' descriptions of non-smokers also indicate that this concept is not as simple as the name might imply. For example, in Johnson and colleague's study (Johnson, Lovato, Maggi, Ratner, Shoveller, Baillie, & Kalaw, 2003), the authors explored the various identities that the youth held in relation to smoking. Although some youth had tried smoking in the past, they confidently indicated that smoking no longer had a place in their lives, and they self-identified themselves as non-smokers.

There is another group of researchers who avoid using the term non-smokers. Instead, they draw on the stage models of smoking uptake process to categorize adolescents in relation to specific smoking behaviours (Blitstein, Robinson, Murray, Klesges, & Zbilowski, 2003; Mayhew,

Flay, & Mott, 2000; Wakefield et al., 2004). For example, instead of categorizing youths into one general group named non-smokers, these authors group them into never smokers, triers, and experimenters.

Labelling and defining smoking status among adolescents is clearly a challenge. There is no standard set of definitions for commonly used terms, such as smoker or non-smoker. While the concepts surrounding these terms are generally well understood, agreement on precise definitions is elusive (Jacobson, Lantz, Warner, Wasserman, Pollack, & Ahlstrom, 2001). This is partly because different studies have different aims which determine, to some extent, how researchers define non-smokers. Also, the inconsistencies may be predicated on the different assumptions that authors hold regarding non-smoking and non-smokers. Although it is beyond the purpose of this literature review to generate a definition of non-smokers, two conclusions can be made: First, given the lack of agreement on the definition of non-smokers, it is necessary for researchers who use the label of non-smokers to clearly describe how they use the term in their studies. Second, when never smokers, triers and experimenters are classified as non-smokers, researchers have to be aware that these youths have different prior experiences with smoking that may influence their attitudes toward smoking and smoking behaviours (Unger, Johnson, Stoddard, Nezami, & Chou, 1997).

The conceptualization and operationalization of susceptibility to smoking

Adolescent non-smokers constitute a heterogeneous group. It is not only because they have different smoking experiences, but also because they vary in their risk of becoming a regular smoker in the future. Among the known risk factors for adolescents' smoking uptake,

susceptibility to smoking is a relatively new factor. It was first introduced by Pierce and his team in 1995 (Pierce, Farkas, Evans, & Gilpin, 1995), with the purpose of identifying susceptible adolescents who are in the cognitive predisposition stage of tobacco use. The underlying assumptions of this concept are: (1) Adolescents who are susceptible to future smoking are those who do not have a firm commitment to not smoke; and (2) When the opportunity to try smoking arises, the susceptible adolescents may respond with a rhetorical “why not?” and try a cigarette. In other words, the lack of a firm commitment to not smoke may determine whether or not an adolescent takes up smoking when presented with the opportunity (Unger et al., 1997).

In Pierce et al.’s original work in 1995 three questions were used to categorize adolescents into susceptible or not susceptible to smoking. The questions included: (1) Do you think that you will try a cigarette soon? (yes/no); (2) If one of your best friends were to offer you a cigarette, would you smoke it? (definitely yes/ probably yes/ probably not/ definitely not); and (3) Do you think you will be smoking cigarettes 1 year from now? (definitely yes/ probably yes/ probably not/ definitely not). Adolescents who had never tried a cigarette were asked to answer all three questions, while those who had tried or experimented with cigarettes were only asked the last two questions. Only the adolescents who responded “no” to question (1) *and* “definitely not” to *both* question (2) *and* (3) were categorized as not susceptible, while those who gave any other responses were categorized as susceptible. Among the researchers who have examined the concept of susceptibility to smoking, some used the three questions that Pierce et al. proposed, while others simplified the measure by using less than three questions. For example, in Unger et al.’s study (2001), given that the questions (1) and (3) were quite similar, the authors omitted

question (1) and only used questions (2) and (3) to measure susceptibility to smoking among non-smokers, including never smokers, triers, and experimenters.

Regardless whether the researchers used two or three questions, the measure of susceptibility to smoking is usually composed of two expectational aspects (Kremers, Mudde, & De Vries, 2001). One aspect is regarding the subjective estimation of smoking in the future. This is related to the question “Do you think you will try a cigarette soon?” or the question “Do you think you will be smoking cigarettes 1 year from now?” The other aspect is regarding the self-efficacy of remaining non-smoking. Self-efficacy refers to an individual’s conviction that he/she can successfully perform the behavior in different contextual settings (John, Meyer, Rumpf, & Hapke, 2004; Pierce, Distefan, Kaplan, & Gilpin, 2005). This is related to the question “If one of your best friends were to offer you a cigarette, would you smoke it?” Adolescents who are not capable of giving extremely negative responses to all of the questions about the two aspects are identified as lack of firm commitment not to smoking and, therefore, may be at risk for taking up cigarettes in the future. The subjective estimation of smoking and efficacy expectations were found to be the only two smoking-related cognitions that significantly predicted future behaviour (Sussman, Dent, Flay, Hansen, & Johnson, 1987). Some authors operationalized the concept of susceptibility to smoking as including only one aspect. For example, Borzekowski and colleagues (1999) and Weiss et al. (2006) measured susceptibility to smoking by asking participants only the question(s) about estimation of future smoking. The validity of the measure can be questioned because the teens who do not think that they intend to smoke in the future but think that they may smoke the cigarettes offered by their friends will not

be identified as being susceptible to smoking. Accordingly, the prevalence of susceptibility to smoking may be underestimated. Findings of the studies using this operationalization must be carefully interpreted.

In most of the studies on susceptibility to smoking, researchers adopted the measurement and categorization suggested by Pierce and colleagues in their 1995 paper, and classified adolescent participants into two dichotomous groups –susceptible or not susceptible. A few researchers, including Pierce himself, later attempted to treat susceptibility to smoking as an ordinal or continuous variable. For example, in their 1996 article, Pierce and colleagues categorized the youth participants into three levels – not susceptible, level one susceptible (one response indicating susceptibility) and level two susceptible (two or three responses indicating susceptibility). Unger et al. created a continuous susceptibility scale in one of their studies (Unger et al., 1997) to assign scores to their participants based on the participants’ responses to the susceptibility questions. The variable had a range of 0 (not susceptible) to 3 (high level susceptible). Ordinal variables and continuous variables are usually more preferable than dichotomous variables in quantitative research because dichotomization may reduce the statistical power to detect a relation between a dependent and an independent variable, and may underestimate the extent of variation within each group (Altman & Royston, 2007; Cohen, 1983). Despite these strengths, susceptibility to smoking has not been used as an ordinal variable or a continuous variable in the literature. Researchers’ reluctance to treat susceptibility to smoking as ordinal or continuous variables may be due to two problems of the data. First, it is not surprising that the higher the susceptibility level, the fewer the participants at that level. For example,

Pierce et al. (1996) reported that out of 4,500 youth participants in their study, only 52 were classified as level three susceptible, constituting only 1% of the total sample. If the sample size of certain category is too small, it may reduce the power of some statistical analyses (Munro & Page, 1993). Second, when susceptibility to smoking is used as a continuous variable, it usually is non normally distributed and displays a skewed distribution. For example, in Unger et al.'s 1997 study, the majority (75.5%) of the participants scored 0 (not susceptible), 14.4% scored 1 (one susceptibility response), 7.2% scored 2 (two responses), and 2.9% scored 3 (all three susceptibility responses). Including a skewed variable into a multivariate analysis may reduce the robust of the analysis because the assumption of normality is violated (Tabachnick & Fidell, 2001). These two reasons may explain why susceptibility to smoking is found to be widely used as a dichotomous variable in literature.

Literature Review – Susceptibility to Smoking among Adolescents

The articles that were included in this literature review were those that addressed one or more of the following areas: (1) prevalence of susceptibility to smoking among adolescents; (2) the predictive validity of susceptibility to smoking on youths' future tobacco uptake; (3) predictors of susceptibility to smoking among adolescents. Articles in which the authors used the term 'susceptibility to smoking' but did not adopt the measurement of susceptibility to smoking suggested by Pierce et al. were excluded. The articles were obtained through three methods of literature search: (1) searching Academic Search Premier and Medline electronic databases, using key words of *smoking/tobacco*, combined with key words of *adolescent/youth/teen*, and *susceptibility*; (2) hand searching of key journals related to adolescent health or tobacco research,

for example, *Nicotine & Tobacco Research*, *Substance Use & Misuse*, *Tobacco Control*, and *Journal of Adolescent Health*; and (3) reviewing published reference lists. The search was limited to empirical articles or review papers that were in the English language, and were published or unpublished but in the public domain. The search through electronic databases and key journals was limited to those published during the last 15 years (1993 to 2007). No geographical limitations were imposed on the search of references.

Nineteen relevant articles were identified and reviewed. For each article, the following data were extracted using a standardized form: (1) first author's name and year of publication; (2) study design (cross-sectional vs. longitudinal, sampling strategy, length of follow-up); (3) participant characteristics; (4) measures; (5) primary findings related to susceptibility to smoking; and (6) theoretical and methodological evaluations of the study. Except one study that was conducted in Canada, all of the remaining studies were conducted in the US. Ten were cross-sectional and nine were longitudinal studies with the range of follow-up interval from one to four years. Table 1-1 shows the characteristics of these 19 reviewed articles.

Prevalence of susceptibility to smoking among adolescents

Out of the 19 reviewed articles, seven provided information about the prevalence rates of susceptibility to smoking in adolescents (Table 1-2). Most of the rates were reported for never smokers, and ranged from 19.8% to 24.6%. In a sample of 1,955 adolescent non-smokers that was constituted of never smokers and triers, 27% of the subjects were identified as susceptible to smoking (Huang, Hollis, Polen, Lapidus, & Austin, 2005). The prevalence appears to vary by teens' previous smoking experiences. Choi and his team (Choi, Gilpin, Farkas, & Pierce, 2001)

Table1-1: Characteristics of the 19 studies included in the literature review

Authors (Year)	Type of Research	Type of Sample & Sample Characteristics	Measure of susceptibility to smoking & classification
Borzekowski, D. L. G. et al. (1999)	Cross-sectional	Randomly selected sample (class level); 571 7 th graders.	Two questions were asked: - Do you think you will try a cigarette soon? - At any time during the next year, do you think you will smoke a cigarette? Participants were classified into four groups: - no smoking experience and no intent - experience and no intent - Experience and intent - current smokers
Castrucci, B. C. et al. (2002)	Cross-sectional	Randomly selected sample (school level & class level); 17,287 9 th -12 th graders	Three questions were asked: - If one of your best friends were to offer you a cigarette, would you smoke it?

Authors (Year)	Type of Research	Type of Sample & Sample Characteristics	Measure of susceptibility to smoking & classification
Choi, W. S. et al. (1997)	Longitudinal (4-year interval)	Random digit dialled sample; 2,684 adolescents aged 12-18 years old, who were triers or experimenters at baseline (87% follow-up rate).	<ul style="list-style-type: none"> - At any time during the next year do you think you will smoke a cigarette? - Do you think you will ever smoke a cigarette in the future? <p>Never smoker participants were classified into two groups:</p> <ul style="list-style-type: none"> - Not susceptible; - Susceptible. <p>Two questions were asked:</p> <ul style="list-style-type: none"> - If one of your best friends were to offer you a cigarette, would you smoke it? - Do you think you'll be smoking one year from now? <p>Participants were classified into two groups:</p> <ul style="list-style-type: none"> - Commitment to not smoke - Not commitment to not smoke

Authors (Year)	Type of Research	Type of Sample & Sample Characteristics	Measure of susceptibility to smoking & classification
Choi, W. S. et al. (2001)	Longitudinal (4-year interval)	Random digit dialled sample; 7,960 adolescents aged 12-18 years old (87% follow-up rate).	Three questions were asked: - Do you think you will try a cigarette soon? - If one of your best friends were to offer you a cigarette, would you smoke it? - Do you think you will be smoking one year from now? Participants were classified into two groups: - Not susceptible - Susceptible
Distefan, J. M. et al. (1998)	Longitudinal (4-year interval)	Random digit dialled sample; 9,135 adolescents aged 12-18 years old (87% follow-up rate).	Three questions were asked: - Do you think you will try a cigarette soon? - If one of your best friends were to offer you a cigarette, would you smoke it? - Do you think you will be smoking one year from now?

Authors (Year)	Type of Research	Type of Sample & Sample Characteristics	Measure of susceptibility to smoking & classification
Feighery, E. et al (1998)	Cross-sectional	Randomly selected sample (class level); 571 7 th graders.	<p>Never smoker participants were classified into two groups:</p> <ul style="list-style-type: none"> - Not susceptible - Susceptible <p>Three questions were asked:</p> <ul style="list-style-type: none"> - Do you intend to try a cigarette soon? - If one of your best friends were to offer you a cigarette, would you smoke it? - At any time during the next year, do you think you will smoke a cigarette? <p>Participants were classified into three levels:</p> <ul style="list-style-type: none"> - No smoking experience and not susceptible; - Having smoking experience and not susceptible; - Having smoking experience and susceptible

Authors (Year)	Type of Research	Type of Sample & Sample Characteristics	Measure of susceptibility to smoking & classification
Filice, G. A. et al. (2003)	Cross-sectional	Convenient sample; 848 9 th -12 th graders.	<p>Three questions were asked:</p> <ul style="list-style-type: none"> - Do you think you will try a cigarette soon? - If one of your best friends were to offer you a cigarette, would you smoke it? - At any time during the next year, do you think you will smoke a cigarette? <p>Never smoker participants were classified into two groups:</p> <ul style="list-style-type: none"> - Not susceptible - Susceptible
Gritz, E. R. et al. (2003)	Longitudinal (1-year interval)	Convenient sample; 1,441 5 th , 8 th , and 12 th graders (82% follow-up rate).	<p>Three questions were asked:</p> <ul style="list-style-type: none"> - Do you think that you will try a cigarette soon? - If one of your best friends were to offer you a cigarette, would you smoke it?

Authors (Year)	Type of Research	Type of Sample & Sample Characteristics	Measure of susceptibility to smoking & classification
Huang, M. et al. (2005)	Longitudinal (2-year interval)	Convenient sample; 1,955 adolescent non-smokers (never smokers and triers) aged 14-17 being seen for routine medical care (90% follow-up rate).	<p>- Do you think you will be smoking cigarettes 1 year from now?</p> <p>Never smoker participants were classified into two groups:</p> <ul style="list-style-type: none"> - Not susceptible - Susceptible <p>Three questions were asked:</p> <ul style="list-style-type: none"> - Do you think you will try a cigarette within the next six months/next thirty days? - If one of your best friends were to offer you a cigarette, would you smoke it? - Do you think you will be smoking cigarettes one year from now? <p>Participants were classified into two groups:</p>

Authors (Year)	Type of Research	Type of Sample & Sample Characteristics	Measure of susceptibility to smoking & classification
			- Not susceptible - Susceptible
Huang, T. T. K et al. (2000)	Cross-sectional	Randomly selected sample (school level & class level); 6,929 10 th graders.	Two questions were asked: - Do you think you'll smoke in the next year? - If your best friend offered you a cigarette, would you smoke it? Participants were classified into two groups: - Not Susceptible - Susceptible
Leatherdale, S. T. et al. (2006)	Cross-sectional	Convenient sample; 4,286 6 th & 7 th graders	Three questions were asked: - Do you think you would try a cigarette soon? - If one of your best friends were to offer you a cigarette, would you smoke it?

Authors (Year)	Type of Research	Type of Sample & Sample Characteristics	Measure of susceptibility to smoking & classification
MMWR (2006)	Cross-sectional	Stratified sampling at multiple levels; 68,611 youths aged 12-17 years.	<p>- At any time during the next year, do you think you will smoke a cigarette?</p> <p>Never smoking participants were classified into two groups:</p> <ul style="list-style-type: none"> - Not susceptible; - Susceptible. <p>Two questions were asked:</p> <ul style="list-style-type: none"> - If one of your best friends offered you a cigarette, would you smoke it? - At any time during the next 12 months, do you think that you will smoke a cigarette? <p>Never smoker participants were classified into two groups:</p> <ul style="list-style-type: none"> - Not susceptible - Susceptible

Authors (Year)	Type of Research	Type of Sample & Sample Characteristics	Measure of susceptibility to smoking & classification
Pierce, J. P. et al. (1995)	Cross-sectional	Random digit dialled sample; 1,789 adolescents aged 12-17 years.	Three questions were asked: - Do you think you would try a cigarette soon? - If one of your best friends were to offer you a cigarette, would you smoke it? - At any time during the next year, do you think you will smoke a cigarette? Never smoker participants were classified into two groups: - Not susceptible; - Susceptible.
Pierce, J. P. et al. (1996)	Longitudinal (4-year interval)	Random digit dialled sample; 4,500 adolescent never smokers aged 12-18 years (87% follow-up rate).	Three questions were asked: - Do you think you will try a cigarette soon? - If one of your best friends were to offer you a cigarette, would you smoke it?

Authors (Year)	Type of Research	Type of Sample & Sample Characteristics	Measure of susceptibility to smoking & classification
Pierce, J. P. et al. (2005)	Longitudinal (3-year interval)	Random digit dialled sample; 2,119 adolescent never smokers aged 12-17 years (77% follow-up rate).	<p>- Do you think you will be smoking cigarettes 1 year from now?</p> <p>Participants were classified into four levels:</p> <ul style="list-style-type: none"> - Not susceptible; - Susceptible level 1 (one response indicating susceptibility); - Susceptible level 2 (two responses indicating susceptibility) - Susceptible level 3 (three responses indicating susceptibility) <p>Three questions were asked:</p> <ul style="list-style-type: none"> - Do you think you would try a cigarette soon? - If one of your best friends were to offer you a cigarette, would you smoke it? - At any time during the next year, do you think you will smoke a cigarette?

Authors (Year)	Type of Research	Type of Sample & Sample Characteristics	Measure of susceptibility to smoking & classification
			<p>Participants were classified into three levels:</p> <ul style="list-style-type: none"> - Not susceptible (committed never smokers); - Susceptible (answered at least one question “probably not”, but no question “probably yes” or “definitely yes”); - Highly susceptible (answered at least one question “probably yes” or “definitely yes”)
Unger, J. B. et al. (1995)	Cross-sectional	Convenient sample; 386 8 th graders.	<p>One question was asked:</p> <ul style="list-style-type: none"> - Do you think you will smoke a cigarette in the next two months? <p>Never smoker participants were classified into two groups:</p> <ul style="list-style-type: none"> - Not susceptible - Susceptible
Unger, J. B. et al.	Longitudinal	Convenient sample;	Three questions were asked:

Authors (Year)	Type of Research	Type of Sample & Sample Characteristics	Measure of susceptibility to smoking & classification
al. (1997)	(2-year interval)	687 7th grade never smokers (60% follow-up rate at year 1; 53% follow-up rate at year 2).	<ul style="list-style-type: none"> - Honestly, do you think you would like to try smoking a cigarette? - Do you think you will ever smoke every day? - Do you think you will ever smoke every month? <p>Participants were both classified into two groups (not susceptible vs. susceptible) and assigned scores based on their responses to the three questions:</p> <ul style="list-style-type: none"> - score 0 = no susceptible responses - score 1 = one susceptible response - score 2 = two susceptible responses - score 3 = three susceptible responses
Unger, J. B. et al. (2001)	Cross-sectional	Randomly selected sample (School level & class level);	<p>Two questions were asked:</p> <ul style="list-style-type: none"> - If one of your best friends were to offer you a cigarette,

Authors (Year)	Type of Research	Type of Sample & Sample Characteristics	Measure of susceptibility to smoking & classification
		6,929 10 th graders	would you smoke it? - At any time during the next year, do you think you will smoke a cigarette? Participants were classified into two groups: - Not susceptible - Susceptible
Weiss, J. W. et al. (2006)	Longitudinal (2-year interval)	Convenient sample; 3,190 6 th graders (88% follow-up rate at year 1; 80% follow-up rate at year 2) 2,292 completed surveys in all three waves.	One question was asked: At any time in the next year, do you think you will smoke a cigarette? Never smoker participants were classified into two groups: - Not susceptible - Susceptible

Table 1-2: Prevalence of susceptibility to smoking among adolescents

Authors (year)	Sample	Prevalence of susceptibility to smoking			
		By smoking status	By gender	By grade / age	By ethnicity
Choi, W. S. et al. (2001)	12-18-year old teens	19.8% among never smokers; 29.7% among puffers; 25.3% among non-current experimenters; 63.5% among recent experimenters.	-	-	-
Filice, G. A. et al. (2003)	9 th – 12 th graders who were never smokers	-	-	31% among 9 th graders; 28% among 10 th graders; 21% among 11 th graders; 19% among 12 th graders	20% among Asians; 32% among European Americans; 18% among African Americans.
Gritz, E. R.	5 th , 8 th , and	23% among never smokers	-	-	-

Authors (year)	Sample	Prevalence of susceptibility to smoking			
		By smoking status	By gender	By grade / age	By ethnicity
et al. (2003)	12 th graders				
Huang, M. et al. (2005)	14-17-year old teens	27.0% among non-smokers (including never smokers and triers)	24.0% among boys; 28.6% among girls.	31.0% among age of 14; 26.0% among age of 15; 23.5% among age of 16; 24.4% among age of 17.	25.3% among White; 31.5% among non White.
MMWR, 2006	12-17-year old never smokers	22.2% among never smokers.	22.7% among boys; 21.8% among girls.	-	20.8% among White; 23% among African American 18.3% among Asian (15.3% among Chinese) 27% among Hispanic.
Unger, J. B. et al.	7 th graders	24.6% among never smokers	-	-	-

Authors (year)	Sample	Prevalence of susceptibility to smoking			
		By smoking status	By gender	By grade / age	By ethnicity
(1997)					
Unger, J. B. et al.	10 th graders	24.0% among never smokers;	-	-	-
(2001)					

found that among adolescent never smokers aged 12-17 years, the prevalence rate of susceptibility to smoking was approximately 20%. This rate increased to 30% among puffers and 25% among non-current experimenters (who smoked \geq one cigarette but <100 cigarettes, and did not smoke in the last 30 days). The highest prevalence rate of susceptibility (65%) was found among recent experimenters (who smoked \geq one cigarette but <100 cigarettes, and smoked in the last 30 days), which was three times higher than the rate among never smokers. There is some evidence that the proportion of adolescents who are susceptible to smoking decreases as they grow older. This pattern was observed in two studies. For example, Filice and team (Filice, Hannan, Lando, & Joseph, 2003) investigated 848 grade 9th to 12th students and reported that the prevalence rate was 31% for 9th graders, 28% for 10th graders, 21% for 11th graders, and 19% for 12th graders. The authors presumed that greater susceptibility to smoking among 9th and 10th graders might be due to stress, associated with transitions into high school. In another study, Huang et al. (2005) reported the rates of susceptibility to smoking among teens aged 14 to 17 years. The rates were 31%, 26%, 24% and 24% for 14, 15, 16, 17 years old teens, respectively.

In a few studies the prevalence rate of susceptibility to smoking has been reported by gender and ethnicity. It was found in Huang et al.'s (2005) study that 24% of male students aged 14 to 17 were susceptible to smoking. In comparison, 29% of female students of the same age were susceptible. Data from a US national survey with a sample of 68,611 teens aged 12-17 years showed that the rates of susceptibility to smoking were similar between gender groups – 23% for boys and 22% for girls (MMWR, 2006). Three studies provided the rates of susceptibility to smoking by ethnicity. Huang et al. (2005) simplified the ethnicity category by classifying the

respondents into two groups – White and non White, and reported that 25% of the White adolescent never smokers aged 14-17 years were susceptible, vs. 32% of non White adolescents. Filice et al.'s study (2003) included three ethnic groups of 9th to 12th graders who never smoked. The susceptibility rate was higher in European Americans (32%) than in Asian Americans (20%) and African Americans (18%). However, findings of a more recent national survey indicated that Hispanic teens aged 12-17 years had the highest rate of susceptibility to smoking (27%). They were followed by African Americans (23%), Whites (21%) and Asians (18%) (MMWR, 2006).

Drawing definitive conclusion about the prevalence of susceptibility to smoking among adolescents is difficult due to the differences in target population, sample sizes, years when the studies were conducted, and geographic locations. It is also limited by the relatively small number of studies of this kind. In spite of the difficulties and limitations, it can be concluded that approximately one-fourth of adolescent non-smokers lack a firm commitment to not smoke in the future.

Susceptibility to smoking and future smoking behaviours

A useful measure of adolescent susceptibility to smoking must meet two requirements: (1) The validation of the susceptibility measure as a predictor of future smoking behaviours needs to take place within a longitudinal study. Adolescents who are susceptible need to be followed over a period of time to determine whether or not they take up smoking. (2) Susceptibility to smoking must account for a significant proportion of the variance in smoking uptake, independent of the effects of other psychosocial variables already known to predict cigarette smoking, such as demographic, attitudinal, and social influence variables (Pierce et al., 1995; Unger et al, 1997).

In this section the predictive validity of the measures of susceptibility to smoking will be reviewed. Findings of nine longitudinal studies regarding susceptibility and youth smoking behaviours are examined. The studies have been grouped by the analytic methods used - univariate analysis or multivariate analysis.

Findings of univariate analyses

Univariate analyses of the influences of susceptibility to smoking on predicting future smoking behaviours have been reported in two studies. In a nationally representative sample of 4,500 adolescent non-smokers aged 12-18 years, Pierce et al. (1996) examined the association between each of the three questions of susceptibility to smoking and later smoking behaviours (experimentation with cigarettes and established smoking) among those who reported they had never smoked, not even a puff, at baseline. For the first question “Do you think you will try a cigarette soon?” approximately 71% of adolescent never smokers who in 1989 thought that they would try a cigarette soon had experimented with cigarettes by 1993, compared with only 38% of those who did not think that they would try a cigarette soon ($p < .0001$). The proportion for established smoking at follow-up was 17% among adolescent never smokers who thought that they would try a cigarette soon at baseline, and was 7% among those who did not think that they would try a cigarette soon ($p = .0006$). For the second question “If one of your best friends were to offer you a cigarette, would you smoke it?” the vast majority of never smokers indicated that they would definitely not smoke cigarettes if they were offered by friends. These teens were found to be less likely than their counterparts to have experimented with cigarettes (37% vs. 60%, $p < .0001$) or to be established smokers four years later (7% vs. 11%, $p = .0105$). Similarly, for

the third question “Do you think you will be smoking cigarettes one year from now?” the vast majority of respondents indicated “definitely not”. Members of this group were also less likely to have experimented with cigarettes (37.8% vs. 55.1%, $P < .0001$) or to be established smokers at follow-up (7% vs. 13.3%, $p = .0003$).

In Choi et al.’s study (2001), the authors examined associations between susceptibility to smoking and future smoking behaviours among three groups of adolescent non-smokers aged 12-18 years: never smokers ($n = 4,500$), puffers ($n = 863$), and experimenters ($n = 1,342$). For adolescent never smokers, only 5.6% of those who were not susceptible were current established smokers when re-interviewed 4 years later, compared to 11.2% of those who were susceptible. Similarly, not susceptible puffers were less likely to become established smokers than susceptible puffers (10.8% vs. 19.6%). For experimenters, the percentage of smokers at follow-up was 23.1% for not susceptible experimenters versus 33.8% for those who were susceptible to smoking.

In summary, a strong univariate association was observed between susceptibility to smoking and adolescents’ future tobacco use. Among susceptible never smokers, there were more teens had been found having experimented with cigarettes at follow-up than among non-susceptible never smokers. Within each smoking behaviour category, that is, never smokers, puffers, and experimenters, absence of a firm commitment to not smoke was associated with a higher rate of established smoking at follow-up.

Findings of multivariate analyses

Unlike univariate analysis in which the association between susceptibility to smoking and future smoking behaviours is examined without considering the effects of other factors that may also play a role in explaining future smoking behaviours, multivariate analysis is more robust because if susceptibility to smoking is found to have a significant effect independent of the effects of other variables on future smoking uptake, its predictive validity will be strongly supported. Eight studies that applied multivariate analyses were reviewed. All of the studies used longitudinal design and logistic regression analysis.

In Gritz and colleagues's study (Gritz, Prokhorov, Hudmon, Jones, Rosenblum, Chang, et al., 2003), a school-based sample of 659 adolescents in grades 5, 8, and 12 who were never smokers was followed prospectively for 1 year. The predictors of ever smoking at follow-up (defined as experimenting with cigarettes or being a current or former smoker) were examined by including susceptibility to smoking and other conventional risk factors, such as friends' smoking and family members' smoking, in the prediction model. It was found that susceptibility to smoking at baseline emerged as the strongest predictor of the ever smoking (OR = 3.52) at follow-up. One limitation of the study is that adolescents' future smoking behaviour was operationalized as ever smoking at follow-up. This measure included a range of smoking behaviours from just trying one or two puffs to being a current smoker, making it difficult to interpret the findings and the practical usefulness of the results. Huang et al. (2005) used a more specified outcome variable in their study with 1,955 adolescents aged 14-17 years. They found that susceptibility to smoking at baseline increased the risk of being a current smoker (cigarette smoking on at least one day in the

past 30 days) at 2-year follow-up from at least two to three times more than that of being non susceptible.

The strength of susceptibility measure in predicting the progression from never smoking to experimentation, and the progression from experimentation to established smoking were examined in four studies. In a four-year longitudinal study with 9,135 adolescents aged 12 -18 years, Distefan and her team (Distefan, Gilpin, Choi, & Pierce, 1998) found that susceptibility to smoking was the strongest predictor of the progression from never smoking to experimentation (OR = 2.12). It also appeared to effectively predict established smoking among adolescents who had experimented with cigarettes (OR = 1.82). Susceptibility to smoking was also found to be the strongest predictor of smoking experimentation in two of Pierce et al.'s studies (Pierce et al., 1996; Pierce, et al. 2005). The teens that were susceptible to smoking were two to three times more likely to have experimented with cigarettes by follow-up than those who were not susceptible. However, in contrast to Distefan et al.'s findings, in Pierce et al.'s studies the authors found that susceptibility to smoking was not a significant predictor of future established smoking. This was supported by the study of Unger et al. (1997), in which a convenient sample of 687 7th grade never smokers was followed prospectively for two years. Five logistic regressions were conducted to predict whether adolescents, during the period of two years, had ever had a puff, smoked 1 cigarette, smoked 2-4 cigarettes, smoked 5-20 cigarettes or smoked more than 20 cigarettes, respectively. Results of the multiple logistic regression analyses showed that even after controlling for the potential confounding effects of estimated peer smoking prevalence, parental smoking, the number of cigarette offers received, and beliefs in the positive

consequences of smoking, susceptibility remained a significant risk factor for predicting the smoking behaviours of taking puffs (OR = 2.40), smoking 1 cigarette (OR = 2.89), and smoking 2-4 cigarettes (OR = 2.88), but not for higher levels of smoking behaviours among eighth graders. An explanation for the findings is that susceptibility may be an independent predictor of smoking initiation and experimentation, whereas social-influence variables, such as friends' use and number of offers, may be more important predictors of continued smoking.

One study assessed the interaction effect between previous smoking experience and susceptibility to smoking on the prediction of future smoking behaviour. In a nationally representative sample of 7,960 12-18-year-old adolescents, Choi et al. (2001) found that the effect of smoking experience on predicting future smoking was modified by teens' commitment to not take up cigarettes. At every level of smoking experience, that is, puffer, non-recent experimenter, or recent experimenter, adolescents who were not susceptible were at less risk of becoming future established smokers than those who were susceptible.

Age and ethnicity are another two factors that may also have an interactive effect with susceptibility to smoking on predicting future smoking behaviours. It was found in Choi et al.'s study (1997) that lack of commitment not to smoke was a significant predictor of progression to established smoking for older adolescents (14-18 years old) but was not significant for the younger group (12-13 years old). Among 14-18 year old adolescents, those who lacked a strong commitment not to smoke were nearly twice as likely to progress to established smoking by follow-up than those who were committed to not smoke (OR = 1.88). Among the studies reviewed, Gritz et al.'s study (2003) is the only one that assessed the predictive strength of

susceptibility in different ethnic groups. The study included White (n = 278), African American (n = 247), and Hispanic adolescents (n = 134). The logistic regression was run respectively for each of the three groups. The results indicated that for African Americans and Hispanics, susceptibility was the most powerful predictor of ever smoking, OR was 6.21 and 4.00, respectively. For Whites, it was the second most powerful predictor, OR = 2.76.

In summary, the strong relationships between susceptibility to smoking and future cigarette use that were found in univariate and multivariate analyses provide support for the predictive validity of the susceptibility to smoking measure. As a strong predictor of smoking initiation and experimentation among adolescents, susceptibility to smoking can be considered to be a useful measure to identify teens who are at risk of smoking. Therefore, smoking prevention efforts could be targeted to these teens before they actually begin to use tobacco or become addicted (Filice et al., 2003). Monitoring the percentage of adolescents who are susceptible to smoking could be an important addition to current surveillance systems. Prevention programs should be tailored and evaluated with the goal of minimizing the percentage of smoking susceptible youths (Choi et al., 2001), which in turn may reduce the prevalence of tobacco uptake among adolescents.

Predictors of susceptibility to smoking

Susceptibility to smoking identifies a group of adolescents who are at the stage of cognitive predisposition to future smoking initiation and experimentation. It is important to consider how and why the cognitive shift to susceptibility occurs. In order to understand more about why some adolescents are susceptible while others are not, some investigators have studied the factors that

may play a role in the development of susceptibility to smoking among adolescents. Ten studies that examined these factors and their explanatory effects on susceptibility to smoking were reviewed, and will be reported below.

The selection of potential predictors

Logistic regression was the most frequently used technique for examining predictors of susceptibility to smoking. The basic strategy of logistic regression is to represent a theory in terms of the network of variables that are involved, explicitly stating the causal direction and nature of the relationships between all pairs of variables that are considered (Cohen, Cohen, West, & Aiken, 2003). Given that the susceptibility to smoking is a relatively new concept, theories that focus on explaining smoking susceptibility have not been established. It was found that the theories or theoretical frameworks that the authors of the ten studies drew on to select the potential predictors of susceptibility to smoking were usually borrowed from the area of smoking initiation.

In half of the ten studies, a wide range of psychosocial factors that had been found to be associated with adolescent smoking initiation were included in the models of adolescent susceptibility to smoking (Castrucci, Gerlach, Kaufman, & Orleans, 2002; Filice et al., 2003; Gritz et al., 2003; Pierce et al., 1995; Unger et al., 2001). The implicit assumption of doing so was that because these factors played an important role in the complex smoking initiation process, they were likely also at play in the development of susceptibility to smoking. These factors were usually among the well-established risk factors detailed in the 1994 Surgeon General's report, *Preventing Tobacco Use Among Young People* (USDHHS, 1994). They were

related to four aspects: (1) sociodemographic factors: such as gender, ethnicity, socioeconomic status of family, and parental education; (2) environmental factors: such as peers', siblings' or parents' use and approval of tobacco use, tolerant toward tobacco companies, exposure to pro- and anti-tobacco messages; (3) behavioural factors: such as teens' academic performance, school involvement, and experimentation with any tobacco product; and (4) personal factors: such as teens' beliefs and attitudes toward smoking, depression mood, and rebelliousness.

In the remaining five studies, the authors put more focus on certain specific measures, and examined the explanatory effects of these measures on susceptibility to smoking. For example, in two studies (Borzekowski et al., 1999; Geighery et al., 1998) researchers were interested in how tobacco marketing and cigarette advertisement might influence teens' susceptibility to smoking. Huang et al. (2000) examined the adolescents' exposure to, and perceived usefulness of school-based tobacco prevention programs on predicting susceptibility to smoking. Other measures that were selected based on the investigators' specific research interests included parents' and friends' smoking and smoking susceptibility in Leatherdale et al.'s study (2006), and pro-tobacco and anti-tobacco message in Weiss et al.'s study (2006).

Predictors of susceptibility to smoking

Among the ten articles reviewed, eight used cross-sectional data. The data were analyzed with logistic regression method in six of the studies. In the remaining two studies data were analyzed using proportional odds model. Findings from these cross-sectional studies suggested that the following factors were significantly associated with susceptibility to smoking:

1) Gender: In two population-based studies, one including 9th-12th graders and the other

including 10th graders, girls were found to be approximately 40% more likely to be susceptible to smoking than boys (Castrucci et al., 2002; Unger et al., 2001). The same pattern was found in another study of a convenient sample of 5th, 8th, and 12th graders, in which the possibility of being susceptible for girls was higher than that for boys (OR = 1.91) (Girtz et al., 2003). In Feighery and colleagues' study (1998), however, the authors reported different finding. The girls who were 7th graders in their study were less likely than boys to be susceptible to smoking (OR = 0.58).

2) Age: Being young also appeared to be a risk factor. In Castrucci et al.'s study (2002), adolescents aged 15-16 years were less likely to be susceptible compared to those aged 13-14 years (OR = 0.72). The likelihood was even much less among adolescents aged 17-19 years. Filice and colleagues (2003) also found that 9th graders in their study were more likely to be susceptible than grade 10th and 11th students with an OR of 3.49. These findings are consistent with the findings of descriptive analysis that the proportion of susceptible youths decreases as they grow older.

3) Ethnicity: Hispanic teens were found in two studies to have a higher susceptibility, compared to teens in other ethnic groups. Feighery et al. (1998) reported that Hispanic youth were 2.5 more susceptible than White youth. Hispanics, compared to non Hispanics, were 1.74 times more likely to be susceptible (Huang et al. 2000). Whites were another group of teens that were found to be at risk of being susceptible. Huang et al. (2000) reported that Whites were 1.32 times more likely to be susceptible than non-whites. The authors also indicated that regardless of their low smoking prevalence rates, Asians did not show a significantly lower level of

susceptibility than other ethnic groups.

4) Attitudes toward smoking: The association between positive attitudes toward tobacco use and susceptibility to smoking was assessed in four cross-sectional studies. Having positive attitudes toward smoking was associated with a great likelihood of being a susceptible adolescent with the odds ratios ranging from 1.50 to 2.20 (Castrucci et al., 2002; Filice et al., 2003; Pierce et al., 1995; Unger et al., 2001). Adolescents who held positive attitudes toward smoking believed that smoking helped people be more popular, helped to reduce stress, increased social comfort, and helped make a person look cool. In addition, it was found that adolescents who agreed with statements that indicated tolerance toward tobacco companies were more likely to be susceptible than those who did not agree (OR = 1.65) (Filice et al., 2003).

5) Social environmental variables: The likelihood of being susceptible among adolescents who were exposed to best friend smoking was approximately two times greater than that among adolescents who were not exposed to best friend smoking (Leatherdale, et al., 2006; Pierce, et al., 1995). The number of cigarette offers a youth had received in the past month was significantly associated with susceptibility; the odds ratio was 1.27 (Unger et al., 2001). The effects of parental smoking were examined in Leatherdale et al.'s study. The authors reported that the odds of a never smoker being susceptible to smoking increased if he/she had a mother who smoked (OR = 1.63) (Leatherdale, et al., 2006). School-based prevention programs also play a role in susceptibility to smoking. Youth who did not perceive the smoking prevention programs to be helpful were 2.03 times more likely to be susceptible than those reporting that the programs received at school were helpful (Huang et al., 2000).

6) Social Norms: It was found among 10th grade never smokers that adolescents were more likely to be susceptible to smoking if they perceived that their best friends would act friendly if they smoked (OR = 1.58) (Unger et al., 2001). In addition to adolescents' perceived peer norms, parents' opinions about smoking and its importance were assessed in Castrucci et al.'s study (2002) of 5,334 9th – 12th graders who were never smokers. Those adolescents whose parents did not smoke and who did not value their parents' opinions about smoking were 43% more likely to be susceptible than those whose parents smoked, but who valued their parents' opinions about smoking. This finding suggests that the importance of parents' opinions about smoking can be more influential than parent's smoking behaviours on predicting susceptibility.

The limitation of cross-sectional research is that the findings of these studies can not assign causality and direction to the observed relationship. Among the ten articles reviewed, Gritz and colleagues (2003) conducted the only longitudinal study that included multiple potential predictors of susceptibility to smoking. In their study, 659 adolescents who were non susceptible never smokers at baseline were followed up 1 year later. Results from the logistic regression analysis indicated that best friends' smoking was the most powerful predictor of susceptibility to smoking (OR = 4.32). Other factors that predicted an increased risk of susceptibility included being female (OR = 1.93), being Hispanic (OR = 2.67), having had a detention or suspension in the past year (OR = 1.51), and exposure to pro-tobacco messages (OR = 1.31). School grade acted as a protective factor, with students in higher grades being less likely to become susceptible to smoking during the 1-year follow-up period (OR = 0.80).

Gritz et al. (2003) also examined longitudinal predictors of susceptibility to smoking among

each of the three ethnic groups - White, Hispanic and African American. They found a number of ethnic-specific factors associated with susceptibility. Exposure to pro-tobacco media messages was a risk factor among White and African American students but not among Hispanic students. For White students only, being female emerged as an important predictor of susceptibility (OR = 4.63), as did poor academic performance (OR = 3.41) and friends' approval of smoking (OR = 3.34). For African American and Hispanic students, but not for White students, grade level in school was inversely related to susceptibility. For Hispanic students, having at least one best friend who smoked was strongly associated with susceptibility (OR = 15.06).

Summary

Susceptibility to smoking is a relatively new concept which was proposed by Pierce and colleagues in 1995, in an attempt to identify adolescents who are in the stage of cognitive predisposition to smoking. Susceptible adolescents are those who are not strongly opposed to smoking and cannot rule out the possibility of smoking in the future. It has been found that a significant proportion of adolescents appear to be susceptible to smoking. Evidence of a strong relationship between susceptibility to smoking and future experimentation with cigarettes supports the predictive validity of this measure. Four factors have received highly consistent support as risk factors of susceptibility to smoking. They are: 1) being female; 2) being young or being at lower school grades; 3) having positive attitudes toward smoking; and 4) exposure to peer smoking. Other variables, for example, ethnicity, school performance, and social norms, have also been included in multivariate analysis models. However, the findings in relation to the effects of these factors on susceptibility to smoking are too few to make firm conclusions.

Limitations of current research

Although accumulating research has grown since Pierce et al. published the landmark article introducing the measure of susceptibility to smoking as a predictor of youth cigarette uptake, there are still significant gaps in the literature regarding susceptibility to smoking as it applies to adolescent tobacco use. These gaps are discussed as follows.

Selection of potential predictors of susceptibility to smoking: In most of the studies on the prediction of susceptibility to smoking, the candidate predictors were selected from a wide range of psychosocial factors that have been found associated with adolescent smoking initiation. Although many of these factors that predict smoking initiation also predict susceptibility to smoking, the limitation of doing so has never been addressed. Susceptibility to smoking and smoking initiation are different concepts. They represent different stages of adolescent tobacco use. Some factors that are associated with susceptibility to smoking may not be necessarily associated with smoking initiation, and may not even be examined in the studies on smoking initiation. Therefore, researchers may miss these factors if they limit the selection of the potential predictors of susceptibility to smoking only from the pool of factors associated with smoking initiation. As a newly introduced concept, susceptibility to smoking may be better understood if a qualitative research methodology can be applied to explore what factors may protect teens from or put teens at the risk of susceptibility to smoking.

Gender and susceptibility to smoking: It has been repeatedly reported that gender is a strong predictor of susceptibility to smoking among adolescents. Being a female increases the risk of susceptibility by 40%-100% (Castrucci et al., 2002; Gritz et al., 2003; Unger et al., 2001).

However, it is still unknown through what mechanisms gender plays a role in the prediction of susceptibility to smoking. Because the social meanings that smoking has acquired are different between boys and girls (Clayton, 1991), it is arguable that different psychosocial factors may predict susceptibility in these two gender groups.

Ethnicity and susceptibility to smoking: Ethnicity is a factor whose association with susceptibility to smoking is under-investigated. Among the 19 articles that had been reviewed, less than one third of them included an ethnicity variable in their analyses. Ethnicity-related findings on susceptibility to smoking are elusive. For example, some groups of researchers reported that Asian American adolescents have lower rates of susceptibility to smoking, compared to their White counterparts (Filice et al., 2003; MMWR, 2006); while another group of researchers did not obtain the same findings. Rather, they found that Asians did not show a significantly lower level of susceptibility even though they were repeatedly found having a lower smoking prevalence than other ethnic groups (Huang et al., 2000). In addition to the scarcity of the studies and the inconsistent findings, researchers often stop at just documenting the different prevalence rates of susceptibility to smoking by ethnic groups. They fail to further investigate what may cause the differences.

Another limitation is that almost all of the studies regarding ethnicity and susceptibility to smoking are based on adolescent populations in the United States. Given that the ethnic composition of the adolescent population in Canada is different from that in the US, findings of the studies that were based on American youths may not be generalized to the youths in Canada. According to Statistics Canada (2007), Asian ethnic group constitutes an increasing proportion of

Canadian population, especially the population in metropolitan cities. For example, 49% of the population of the city of Vancouver indicated that they were members of visible minority groups, mostly Chinese. Research is needed to provide the knowledge of susceptibility to smoking among Canadian adolescents and diverse ethnic subgroups.

Research Purposes

This research focused on a sample of Canadian adolescent non-smokers with a particular emphasis on those with Chinese ethnic background. The term “*non-smokers*” is conceptualized in this study as including never smokers, triers and experimenters. A non-smoker is defined as an adolescent who has never smoked cigarettes or has smoked but not in the past 30 days and not more than a package of cigarettes in the entire life. A cut-off of one package of cigarettes was selected because it is postulated that youth who have smoked more than a package are potentially on the way toward developing a smoking habit, and therefore should not be called non-smokers (Dunn & Johnson, 2001).

Adolescents with Chinese ethnic background have been repeatedly found to have lower smoking rates than many other ethnic groups (e.g., Asbridge, Tanner, & Wortley, 2005; Glanz & Maskarinec, 2005). However, little is known about the susceptibility to smoking for this ethnic group. Due to the scarcity of the research, it is not clear whether the prevalence rate of susceptibility to smoking is also low for this ethnic group. Further, it is unknown what role culture plays in the development of susceptibility to smoking among Canadian teens who are of ethnicity of Chinese. Knowledge related to Chinese adolescent susceptibility to smoking is important given the rapid increase of Chinese ethnic population in many metropolitan areas in

Canada. The knowledge will provide an important contribution toward the development of smoking prevention strategies. White/Caucasian adolescents were chosen to be the reference group in this study so that comparisons could be made between Chinese and White/Caucasian groups. Choosing Whites/Caucasians as the reference group in this study was not guided by the traditional assumption that “white people” possess supposedly unique characteristics that make them both a “superior race” and the “norm” by which others are judged (Jay, 2005; Pfeffer, 1998). Rather, the rationale for choosing this group of adolescents as the reference was that these adolescents are the ones on whom health care providers have predominantly based the development of current youth smoking prevention programs in Canada. Comparing Chinese-Canadian teens with White/Caucasian teens may reveal important findings that are meaningful for the improvement of these programs. According to Statistics Canada (2007), *White/Caucasian* has been used as an ethnic category for people who are Caucasian in race or white in colour. Socially, the term “White/Caucasian” refers to people who are of European origin. This White/Caucasian ethnic category is adopted in this study with the caution that White/Caucasian teens may be a heterogeneous group in terms of their ethnic values and beliefs.

This dissertation has three primary aims: (1) to document the prevalence of susceptibility to smoking among a sample of non-smoking adolescents residing in British Columbia, Canada, and to examine the factors that may explain the variation of susceptibility to smoking among these teens, with the focus on the effects of ethnicity on smoking susceptibility. A quantitative secondary analysis of data from a sample of self-reported White/Caucasian and Chinese students participating in the British Columbia Youth Survey on Smoking and Health in 2001/2002 was

employed to achieve this aim; (2) to explore the non-smoking Chinese Canadian adolescents' views about the protective factors and the risk factors that may lead them to be susceptible to smoking; and (3) to examine Chinese Canadian teens' perspectives on the conceptualization and operationalization of the concept of susceptibility to smoking.

This dissertation is presented in manuscript-based format. It includes three manuscript chapters – Chapter II, Chapter III and Chapter IV, each of which includes a paper that has addressed one of the three primary aims of this study, and is suitable for journal publication. The manuscript-based format is an approved format for dissertations at the University of British Columbia.

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Chapter II

Susceptibility to Smoking among White and Chinese

Non-Smoking Adolescents in Canada*

Experimentation with cigarettes and development of regular smoking typically occur during adolescence (U.S. Department of Health and Human Services, 1994). According to the latest results from the Canadian Tobacco Use Monitoring Survey, 18% of the youth aged 15–19 years reported smoking cigarettes, either daily or occasionally (Health Canada, 2004). While the prevalence of cigarette smoking among Canadian adolescents has been declining in recent years, youth smoking is still widely recognized as a significant public health problem, such that its prevention remains a national priority. The essence of smoking prevention among adolescents is to prevent teen non-smokers from taking up cigarettes. The development of strategies for assessing a propensity to engage in smoking behavior is, therefore, of great public health importance (Aklin, Lejuez, Zvolensky, Kahler, & Gwadz, 2005). One strategy that was proposed by Pierce and colleagues is to examine susceptibility to smoking. Susceptibility to smoking is a concept used to describe a cognitive predisposition to smoke, which is characterized by lack of a firm commitment not to smoke in the future (Pierce, Farkas, Evans, & Gilpin, 1995). A number of studies have supported that being susceptible to smoking is one of the risk factors for future smoking behavior. Among the non-smoking population, those susceptible to smoking are in an

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early phase of cognitive changes that may result in experimentation with cigarettes and the development of regular smoking and tobacco addiction (Distefan, Gilpin, Choi, & Pierce, 1998; Pierce, Choi, Gilpin, Farkas, & Merritt, 1996; Unger, Johnson, Stoddard, Nezami, & Chou, 1997; Unger et al., 2001). Susceptibility to smoking has, therefore, been considered to be a useful construct to identify teens at risk of taking up smoking, and to target smoking prevention efforts (Filice, Hannan, Lando, & Joseph, 2003).

The measure of susceptibility to smoking has usually been composed of two expectational aspects (Kremers, Mudde, & de Vries, 2001). One aspect relates to the subjective estimation of smoking in the future, and is usually assessed by the question “Do you think you will be smoking a cigarette one year from now?” The other aspect relates to the self-efficacy of remaining a non-smoker, and is usually assessed by the question “If one of your best friends were to offer you a cigarette, would you smoke it?” Adolescents who are not capable of giving extremely negative responses to both of the questions are defined as lacking a firm commitment to not smoke and, therefore, being susceptible to smoking. Huang, Hollis, Polen, Lapidus, and Austin (2005) examined the susceptibility to smoking in adolescent non-smokers aged 14–17, and found that 27% of the subjects were susceptible. Choi and his team reported that the prevalence of susceptibility to smoking appeared to vary in relation to teens’ previous smoking experiences. The prevalence was about 20% among adolescent never smokers aged 12–17. This rate increased to 30% among puffers and 25.3% among non current experimenters (Choi, Gilpin, Farkas, & Pierce, 2001).

Giving the importance of susceptibility to smoking in predicting future smoking behaviors, a better understanding of susceptibility to smoking, in terms of why some adolescents are susceptible while others are not, is needed. Several studies found in the literature have been undertaken to examine the factors that may play a role in the development of susceptibility to smoking among adolescent non-smokers. It was found that four factors—being female, being young or being at lower school grades, having positive attitudes toward smoking, and exposure to peer smoking, received highly consistent support as predictors of susceptibility to smoking. Although these findings provide a beginning understanding of who is susceptible, knowledge is limited by the scarcity of the research. Also, little is known about the role of ethnicity in predicting the susceptibility to smoking among adolescents. There is only one study that has included ethnicity in the list of explanatory variables to predict susceptibility to smoking (i.e., Gritz et al., 2003). Although the study findings suggest a significant effect of ethnicity on susceptibility to smoking, the findings were based on the U.S. adolescent population and focused on White, African American, and Hispanic ethnic groups. These findings cannot be generalized to Canadian adolescents, in which Asian groups, most of them Chinese, constitute a large proportion of the population, particularly in metropolitan areas. For example, one third of the total population of the city of Vancouver reported that they had a Chinese ethnic background (Statistics Canada, 2003). It has been repeatedly found that smoking initiation rates are lower among teens with a Chinese ethnic background than among White/Caucasian teens (e.g., Asbridge, Tanner, & Wortley, 2005; Glanz & Maskarinec, 2005). It is unknown whether ethnicity has the same effect on susceptibility to smoking among Canadian teens. Given the rapid

increase of Chinese ethnic population in many metropolitan areas in Canada, smoking-related knowledge of this ethnic group may provide an influential contribution toward the development of smoking prevention strategies in these areas. This study used a sample of White/Caucasian and Chinese adolescent non-smokers in British Columbia, Canada, and focused on documenting the prevalence of susceptibility to smoking and exploring the factors that might explain susceptibility to smoking.

Theoretical Framework

Because susceptibility to smoking is a relatively new concept that was first proposed in 1995, theories that focus on explaining smoking susceptibility have not been proposed. Given that being susceptible to smoking is conceptualized as an early stage in the process of moving from being a non-smoker to a tobacco user (Unger et al., 2001), it is reasonable to believe that theories of smoking initiation may provide a starting point for the investigation of the predictors of susceptibility to smoking. It is well recognized that adolescent smoking initiation is a complex issue and is determined by a number of factors. Researchers have argued that a thorough understanding of this behavior must be based on a comprehensive analysis of various sociological, psychological, and situational factors (Collins & Ellickson, 2004; Delorme, Kreshel, & Reid, 2003). In alignment with this argument, we chose the “Framework for Organizing the Theoretical Causes of Substance Use” of Petraitis and colleagues as the theoretical framework in this study. Petraitis, Flay, and Miller (1995) reviewed 14 multivariate theories of experimental substance use among adolescents, and developed the framework, in which they classified the causes of experimental substance use, including smoking, into three types of influences: (1)

interpersonal influence: refers to the characteristics and behaviors of the people who make up adolescents' most intimate support system; (2) attitudinal influence: refers to adolescents' own smoking attitudes and factors that affect those attitudes; and (3) intrapersonal influence: refers to adolescents' personality traits, affective states, and general behavioral skills. These three types of influences guided the selection of potential explanatory factors in this study.

Methods

Sample

The study used a secondary analysis of data from students participating in the British Columbia Youth Survey on Smoking and Health (BCYSOSH) in 2001/2002. BCYSOSH was a cross-sectional survey that took place in two regions of British Columbia, Canada: the city of Vancouver and the city of Prince George and area. A stratified, random sample of students enrolled in grades 10 and 11 in 13 schools was included in BCYSOSH. Participants in the survey completed a self-administered questionnaire during class time under the supervision of trained research staff. In all but one of the schools, a passive consent procedure was adopted that informed parents about the study by a letter sent home from the school. Active parental consent was used in one school. Completed questionnaires were received from 3,280 students. The overall response rate for the BCYSOSH was 80%. The vast majority of non-responders were absent from class on the day the questionnaire was administered. A small number of students (<1%) who were in class chose not to participate. More details on the methods of BCYSOSH can be found elsewhere (Johnson et al., 2004, 2005).

For the purpose of this study, only current non-smokers with a self-reported White/Caucasian or Chinese ethnic background were included. A current non-smoker was defined as an adolescent who had never smoked cigarettes or had smoked but not in the month preceding the survey and not more than 25 cigarettes in their entire life. A cut-off of 25 cigarettes was selected because it was postulated that youth who had smoked more than a package were potentially on the way toward developing a smoking habit, and therefore should not be called non-smokers (Dunn, 1998). The final sample included 1,870 grade 10 and 11 students who were non-smokers with either a White/Caucasian or a Chinese ethnic background. Both the main study and this secondary study were approved by the University of British Columbia Behavioral Research Ethics Board.

Measures

Outcome variable—susceptibility to smoking. Each of the two aspects of susceptibility to smoking was measured by one question. The aspect of estimation of smoking in the future was measured by asking participants “How likely is it that you will be smoking five years from now?” (very likely, somewhat likely, rather unlikely, and very unlikely). The aspect of self-efficacy was measured by the question “How difficult is it for you not to smoke?” (not at all difficult, not very difficult, fairly difficult, very difficult, and extremely difficult). Only the adolescents who responded “very unlikely” to the question about estimation of smoking and responded “not at all difficult” to the question about self-efficacy were categorized as not susceptible to smoking, while those who gave any other responses were categorized as susceptible to smoking.

Explanatory variables. The explanatory variables covered six areas:

(1) *Demographic information*: Self-report items were included related to *gender, age, grade in school, and ethnicity*.

(2) *Acculturation status*: This was measured by asking about *language spoken at home* (English or other languages) and *being born in Canada* (yes/no).

(3) *Previous smoking experience*: Participants were asked to report how many cigarettes they had smoked in their entire life. This measure categorized non-smoking participants as never smokers if they had no smoking experience, as tryers if they had smoked a puff or puffs, or as experimenters if they had smoked at least one whole cigarette but not more than 25 cigarettes.

(4) *Interpersonal factors*: Respondents were asked to report whether their *mother, father, sibling, boyfriend/girlfriend/best friend smoked*, and to answer a yes/no question of “Have you ever *felt pressured to smoke* by a friend?/by a family member?/by a stranger?/by someone at work?/by a boyfriend or girlfriend?/by someone else?” Any response of “yes” indicated that the respondent had ever felt pressure to smoke. A 5-point Likert scale (never, occasionally, sometimes, frequently, and all the time) was used to measure how frequently the respondents had *cigarettes offered* to them. Teens’ relationships with parents was assessed by a 4-item *parental knowledge* scale, which is often used in family research to determine adolescents’ perceptions of the degree to which their parents know about their free time, school activities, problems or worries, and ideas and opinions (Barber, 1996; Brown, Mounts, Lamborn, & Steinberg, 1993). The mean score of this 5-point Likert scale (from “they don’t know” to “they know everything”) was used. The Cronbach’s α was .80.

(5) *Attitudinal factors: Perceived prevalence of peer smoking* was measured by asking female respondents their estimation of girls' smoking rate at their school and asking male respondents the boys' smoking rate (<20%, 21–40%, 41–60%, and more than 60%). Teen's *positive attitude toward smoking* was assessed using an 11-item scale with a 4-point Likert response format ranging from strongly disagree to strongly agree. These items have been used in many studies to measure adolescent smoking attitudes (e.g., Castrucci, Gerlach, Kaufman, & Orleans, 2002; Weiss & Garbanati, 2004). All items were totaled to obtain an overall measure of attitude toward smoking, with a higher score indicating a more positive attitude. The Cronbach's α was .84.

(6) *Intrapersonal factors: Teen's self-esteem* was measured by the Rosenberg Self-Esteem Scale (Rosenberg, 1965), which consists of 10 items that ask respondents to indicate the extent to which they agree or disagree with self-evaluations. A self-esteem score was based on the mean of the items such that high values indicated more negative feelings of self-esteem. The Rosenberg Self-Esteem Scale has been widely used with adolescents in previous studies and has demonstrated high internal consistency with Cronbach's α s ranging from .83 to .88 (Arbona & Power, 2003; Dekovic, 1999). Respondents' *depressive symptoms* were measured by the 20-item Center for Epidemiological Studies-Depression Scale (CES-D). Scores of all the items were summed to form a total score. Higher scores indicated greater depressive symptoms. Interval consistency had demonstrated good reliability of CES-D in adolescent population (Radloff, 1991). The Cronbach's α s for the two scales in this study were .89 and .87, respectively.

Statistical analysis

Descriptive statistics and chi-square test with critical value set at $p < .05$ were employed to describe the sample and examine the differences between the ethnic subgroups by demographics, country of birth, language mostly spoken at home, smoking experience, and smoking environment. Predictors of susceptibility to smoking were examined using multivariate logistic regression (Hosmer & Lemeshow, 2000). Candidate explanatory variables were identified if they achieved significance (p -values $< .25$) in bivariate association analysis. These variables were then entered into the model to examine the overall model fit and to test the significance of individual coefficients with the critical value set at $p < .05$. All statistical analyses were performed using SPSS version 13.0.

Results

Demographic and social characteristics of sample

Table 2-1 shows the characteristics of the sample, and the results of comparisons between White/Caucasian and Chinese participants. Among 1,870 grade 10 and 11 students, 87% were aged 15 or 16 years old, 49% were male students. The sample was 50% White/Caucasian and 50% Chinese. Over 70% of the sample were born in Canada. One third of the respondents indicated a language other than English was the language they spoke most often at home. Nearly 12% of the respondents reported that their mothers currently smoked, 24% reported father smoking. Sibling smoking and friend smoking were reported by 12% and 14% of the respondents, respectively.

Table 2-1: Characteristics of sample and comparisons between White/Caucasian and Chinese-Canadian participants

Variable	Total	White/Caucasian	Chinese	χ^2	<i>p</i>
	(N = 1,870)	(N = 934)	(N = 936)	(df)	
	n (%)	n (%)	n (%)		
Gender					
Male	910 (48.7)	474 (50.7)	436 (46.6)	3.25 (1)	.071
Female	960 (51.3)	460 (49.3)	500 (53.4)		
Age (years)					
14	51 (2.7)	25 (2.7)	26 (2.8)	8.49 (3)	.037
15*	817 (43.7)	385 (41.3)	432 (46.2)		
16	817 (43.7)	415 (44.5)	402 (42.9)		
17 and up*	184 (9.8)	108 (11.6)	76 (8.1)		
Grade					
10th	929 (49.9)	466 (50.3)	463 (49.6)	.091 (1)	.763
11th	932 (50.1)	461 (49.7)	471 (50.4)		
Born in Canada					
Yes	1320 (70.8)	877 (94.0)	443 (47.5)	486.7 (1)	.000
No	545 (29.2)	56 (6.0)	489 (52.5)		
Language spoken at					

	Total	White/Caucasian	Chinese	χ^2	<i>p</i>
	(N = 1,870)	(N = 934)	(N = 936)	(df)	
Variable	n (%)	n (%)	n (%)		
home					
English	1192 (66.1)	896 (96.9)	296 (33.7)	802.9 (1)	.000
Other	612 (33.9)	29 (3.1)	583 (66.3)		
Smoking experience					
Never smoker*	1258 (67.7)	517 (55.9)	741 (79.4)	128.3 (2)	.000
Tryer*	354 (19.1)	221 (23.9)	133 (14.3)		
Experimenter*	246 (13.2)	187 (20.2)	59 (6.3)		
Mother smoking					
Yes*	208 (11.8)	192 (21.7)	16 (1.8)	454.04 (2)	.000
Never smoked*	1271 (72.2)	437 (49.5)	834 (95.0)		
Quit*	282 (16.0)	254 (28.8)	28 (3.2)		
Father smoking					
Yes	423 (24.3)	202 (23.4)	221 (25.3)	5.69 (2)	.058
Never smoked	821 (47.2)	394 (45.6)	427 (48.9)		
Quit	494 (28.4)	268 (31.0)	226 (25.9)		
Sibling smoking					
Yes*	185 (12.2)	140 (18.1)	45 (6.1)	56.17 (2)	.000

	Total	White/Caucasian	Chinese	χ^2	<i>p</i>
	(N = 1,870)	(N = 934)	(N = 936)	(df)	
Variable	n (%)	n (%)	n (%)		
Never smoked*	1246 (82.5)	584 (75.6)	662 (89.6)		
Quit	80 (5.3)	48 (6.2)	32 (4.3)		
Friend smoking					
Yes*	232 (13.9)	145 (17.3)	87 (10.5)	42.40 (2)	.000
Never smoked	1308 (78.6)	661 (78.8)	647 (78.3)		
Quit*	125 (7.5)	33 (3.9)	92 (11.1)		
Estimation of future smoking					
Very likely	29 (1.6)	11 (1.2)	18 (2.0)	2.82 (3)	.420
Somewhat likely	58 (3.2)	26 (2.8)	32 (3.5)		
Rather unlikely	195 (10.6)	94 (10.2)	101 (11.0)		
Very unlikely	1556 (84.7)	788 (85.7)	768 (83.6)		
Perceived difficulty of not smoking					
Extremely difficult*	22 (1.2)	2 (0.2)	20 (2.2)	17.09 (4)	.002
Very difficult	19 (1.1)	6 (0.7)	13 (1.4)		
Fairly difficult	42 (2.4)	20 (2.3)	22 (2.4)		

	Total	White/Caucasian	Chinese	χ^2	<i>p</i>
	(N = 1,870)	(N = 934)	(N = 936)	(df)	
Variable	n (%)	n (%)	n (%)		
Not very difficult	245 (13.8)	123 (14.1)	122 (13.6)		
Not at all difficult	1446 (77.3)	724 (82.7)	722 (80.3)		

* The Adjusted Standardized Residual >1.96 or < -1.96.

The demographic characteristics were quite similar between White/Caucasian and Chinese subgroups, except that more than half (53%) of the Chinese respondents were not born in Canada, while only 6% of White/Caucasian respondents were not born in Canada ($p = .000$). English was the language that was spoken most often at home by 97% of White/Caucasians and by 34% of Chinese Canadians ($p = .000$). Statistically significant differences were also found in most variables related to the smoking social environment. Over 20% of the White/Caucasian respondents reported having a mother who smoked, but only 2% of Chinese respondents did ($p = .000$). Similarly, the percentage of sibling smoking was much higher for White/Caucasian students than for Chinese students (18% vs. 6%, $p = .000$). Compared with Chinese students, a higher percentage of White/ Caucasian students had best friends or girl/boyfriends who smoked, 11% versus 17% ($p = .000$).

Susceptibility to smoking

More than one in four students in the overall sample were susceptible to smoking (27.7%). Table 2-2 displays the prevalence of susceptibility by demographic and social cultural variables.

Bivariate association analysis identified six candidate explanatory variables—age, gender, grade, mother smoking, cigarette offer, and parental knowledge. Given that the ethno-cultural influence on susceptibility to smoking was part of the authors’ interest in this research, three variables (ethnicity, language spoken at home, and being born in Canada), along with the candidate variables, were entered into the logistic regression model even though these three variables did not achieve the minimum significance level ($p < .25$).

Table 2-2: Susceptibility to smoking by demographic and social cultural variables (N = 1,763)

Variable	Not susceptible (N = 1275)	Susceptible (N = 488)
	n (%)	n (%)
Age		
14	31 (64.6)	17 (35.4)
15	552 (71.7)	218 (28.3)
16	558 (72.6)	211 (27.4)
17	123 (76.9)	37 (23.1)
18	10 (66.7)	5 (33.3)
Grade		
10 th	611 (70.1)	260 (29.9)
11 th	660 (74.6)	225 (25.4)
Gender		
Male	640 (74.9)	214 (25.1)

Variable	Not susceptible (N = 1275)	Susceptible (N = 488)
	n (%)	n (%)
Female	635 (69.9)	274 (30.1)
Ethnicity		
White/Caucasian	638 (72.7)	239 (27.3)
Chinese	637 (71.9)	249 (28.1)
Born in Canada		
Yes	912 (73.0)	338 (27.0)
No	360 (70.9)	148 (29.1)
Language spoken at home		
English	816 (72.3)	312 (27.7)
Other	410 (71.7)	162 (28.3)
Smoking experience		
Never smoker	852 (72.0)	331 (28.0)
Tryer	238 (70.8)	98 (29.2)
Experimenter	176 (75.9)	56 (24.1)
Mother smoking		
Yes	150 (76.5)	46 (23.5)
Never smoked	853 (71.1)	347 (28.9)

Variable	Not susceptible (N = 1275)	Susceptible (N = 488)
	n (%)	n (%)
Quit	200 (74.6)	68 (25.4)
Father smoking		
Yes	287 (71.9)	112 (28.1)
Never smoked	558 (72.5)	212 (27.5)
Quit	343 (73.1)	126 (26.9)
Sibling smoking		
Yes	132 (75.0)	44 (25.0)
Never smoked	842 (71.7)	332 (28.3)
Quit	57 (72.2)	22 (27.8)
Friend smoking		
Yes	157 (73.7)	56 (26.3)
Never smoked	895 (72.4)	342 (27.6)
Quit	82 (68.3)	38 (31.7)

The likelihood ratio test of model fit was statistically significant ($LR-\chi^2_{(4)} = 14.54, p = .006$).

Table 2-3 displays the results of the multiple logistic regression with odds ratio (OR), 95% confidence interval (CI), and significance. Only two variables, gender and grade, were significantly independently associated with susceptibility to smoking. Girls were 1.32 times more likely to be susceptible to smoking compared with boys (OR=1.32, 95% CI 1.05–1.65).

The odds of susceptibility to smoking were significantly lower for grade 11 students compared with grade 10 students (OR=0.80, 95% CI 0.64–0.99). Interactions of ethnicity and gender, and ethnicity and grade were examined, but there were no significant effects.

Table 2-3: Results from multivariate logistic regression – predictors of susceptibility to smoking

Variable	Odds ratio	95% confidence interval	<i>p</i>
Gender			
Boys	1	Reference	
Girls	1.32	1.05-1.65	.016*
Grade			
Grade 10	1	Reference	
Grade 11	0.80	0.64-0.99	.045*
Mother smoking			
No	1	Reference	
Yes	0.79	0.55-1.13	.197
Parental knowledge	1.10	0.98-1.24	.123

*Significance at $p < .05$.

Discussion

Understanding adolescent non-smokers is a prerequisite for the development of effective smoking prevention programs for this population. Teens’ propensity to smoke in the future and the factors associated with their susceptibility to smoking are two important aspects of the

portrait of adolescent non-smokers. This study is the first of its kind to examine these two aspects in a large sample of White/Caucasian and Chinese adolescent non-smokers. The findings indicate that more than one fourth of the adolescent respondents in this study lacked a firm commitment not to smoke in the future. This rate of susceptibility to smoking is similar to those that have been reported in the literature (Filice et al., 2003; Huang et al., 2005).

Unlike the pattern of association with smoking initiation among adolescents, grade in this study was inversely related to susceptibility to smoking, that is, the rate of susceptibility to smoking decreases as grade increases. Given that the proportion of adolescents who had experimented with a cigarette was greater among grade 11 students than among grade 10 students, it could be assumed that there were fewer 11th graders who were curious about smoking than 10th graders, which might partially explain why the rate of susceptibility to smoking was lower in grade 11 than in grade 10. However, curiosity is likely to be only one piece of the puzzle. Other factors that may cause adolescents to entertain the possibility of future smoking, such as the cognitive capability to understand long-term effects of cigarette smoking and the strategies to refuse the cigarettes offered, should also be considered in the endeavor to explain the whole picture of grade difference in susceptibility to smoking.

This study confirmed that the prevalence of susceptibility to smoking was higher in girls than in boys, which had been consistently reported in a number of studies (Castrucci et al., 2002; Gritz et al., 2003; Unger et al., 2001). Importantly, this study also examined the interaction between gender and ethnicity on susceptibility to smoking, and found no interaction effect. In other words, the influence of gender difference on susceptibility to smoking is a cross-ethnicity

phenomenon. Girls are more susceptible than boys in future smoking behavior, no matter whether they are Caucasian or Chinese Canadian. Girls in Canada who have a Chinese ethno-cultural background appear to be very different from the girls in China, where the influence of gender on susceptibility to smoking is significant but in an opposite way— a lower percentage of girls are susceptible to smoking than boys (11.1% vs. 24.9%, $p < .0001$, as reported by Guo et al., 2007). These findings provide directions for future research on how social context may play a role in adolescents', particularly girls', propensity to smoke. Future research is needed to better understand the non-Caucasian ethnic teens who are exposed to smoking beliefs and social norms of both the host culture and the ethnic culture, and to investigate the mechanisms through which the social context may exert different effects on boys and girls in terms of smoking prevention.

Given that the rates of smoking initiation and experimentation have been repeatedly found to be lower among Asian ethnic groups than among White/ Caucasian groups (Ellickson, Perlman, & Klein, 2003; Griesler, Kandel, & Davies, 2002), the rate of susceptibility to smoking should also be lower among Chinese adolescents. However, in this study, Chinese adolescents had the same extent of susceptibility to smoking as their White/Caucasian counterparts. One possible explanation is that the factors that we usually think may protect Chinese adolescents from taking up cigarettes may not have the same effects in protecting them from becoming susceptible to smoking. For example, obedience to parental authority has been considered a protector against smoking up-take during adolescence (Komro, McCarty, Forster, Blaine, & Chen, 2003).

However, when Chinese adolescents in senior high school are asked whether they will smoke in

the near future, they may perceive that they will have much more freedom when they graduate, and will have more chances to experiment with the behaviors that their parents do not permit. Therefore, they may not express a firm commitment to not smoke in the future.

It should not be simply concluded that White/ Caucasian and Chinese adolescents are homogeneous because no difference was found in the rate of susceptibility to smoking between the two ethnic groups in this study; on the contrary, findings of this study encourage a rethinking of the effects of traditional smoking risk factors and protectors in predicting susceptibility to smoking, and stress the importance of further investigating ethnic-specific predictors of susceptibility to smoking.

There are some limitations to this study. First, the data collected were self-reported, and therefore susceptible to social desirability and recall bias. Self-reported data may also have caused some misclassification of previous smoking experience. Second, this study examined two regions of British Columbia. The majority of Chinese adolescents, however, were from one of the two regions. Adolescents in the two ethnic groups, therefore, might have been exposed to different local smoking norms and smoking prevention programs. Third, owing to the limitations of secondary analysis, we were unable to use the same measure as other studies of this kind to assess the self-efficacy aspect of susceptibility to smoking. The question “If one of your best friends were to offer you a cigarette, would you smoke it?” was not included in the original BCYSOSH survey. Instead, this study used the question “How difficult is it for you not to smoke?” to measure the self-efficacy of remaining non-smoking. In spite of the difference, our

conceptualization of susceptibility to smoking seems valid because our findings were consistent with other studies.

Conclusion

Adolescent non-smokers are the target population for smoking prevention efforts. To develop effective preventive strategies, a solid understanding of adolescent non-smokers in terms of their susceptibility to smoking and the factors that are associated with the susceptibility to smoking is necessary. Findings from this study indicated the effects of gender and grade on predicting susceptibility to smoking, and have raised important research questions for future investigation on the role that ethno-cultural factors and social context may play in understanding adolescent non-smokers and their risk for future smoking. Findings of this study also remind public health nurses of the complexity of smoking prevention among adolescents, particularly those who work in the areas with increasingly ethnic diverse populations. Even though the teens with different ethnic backgrounds may have the similar risks of susceptibility to smoking, the factors that put them at risk may be different, which suggests the need to further examine the ethnic-specific predictors of susceptibility to smoking.

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Chapter III

Culture and Remaining Tobacco Free: Findings from a Qualitative Study with Chinese-Canadian Non-Smoking Adolescents*

Background and Research Purpose

The prevalence of smoking among adolescents varies substantially across ethnic groups, and numerous reports show that adolescents from Asian ethnic groups have lower rates of tobacco use than do White/Caucasian adolescents (Chen, Unger, Cruz, & Johnson, 1999; Gfroerer & Caraballo, 2006; Johnson & Hoffmann, 2000). For example, a study using recent US national survey data found that the percentage of youths aged 12-17 years who had smoked one or more cigarettes during the preceding month was 4.3% among Asian Americans and 14.9% among White/Caucasian Americans (Gfroerer & Caraballo, 2006). Similar patterns of cigarette use were also found among Canadian population samples. Johnson and her colleagues conducted a survey that included 3,280 grade 10 and 11 teens from 13 schools in the Province of British Columbia (BC), and reported that the proportion of teens who had smoked at least once during the month preceding the survey was substantially lower in the Asian group than in the White/Caucasian group (7.8% vs. 22.3%) (Johnson et al., 2004). In another Canadian study (Asbridge, Tanner, & Wortley, 2005), using data from a survey of 3,400 Toronto high school students, the authors found similar results, namely, that while 20% of Chinese teens in the study reported having used

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tobacco in the past 12 months, the percentage of smokers in the White/Caucasian group was doubled to nearly 40%.

While these consistent findings are encouraging, the conclusion that Chinese teens in the US or in Canada are at a low risk of cigarette smoking may be misleading. Adolescence is broadly accepted as being the time of life when most tobacco users begin, develop, and establish their behaviour. Nearly all first-use of tobacco occurs before high school graduation (Gritz, et al., 2003; USDHHS, 1994). If individuals are tobacco-free during their adolescent years, they are assumed to not begin smoking as adults (Backinger, Fagan, Matthews, & Grana, 2003). While this assumption may be true for some ethnic populations, it may not be the case for adolescents with a Chinese ethnic background. Findings from a five-year longitudinal study (Ellickson, Orlando, Tucker, & Klein, 2004) indicated that, at age 18, White/Caucasian youths had a substantially higher rate of smoking, compared to Asian youths. Five years later, smoking rates increased modestly for White/Caucasian youths (from 31% to 35%), but a more substantial increase was seen for Asian youths (from 15% to 20%). Trinidad et al.'s research on ethnic disparities revealed that Asian youths in the US initiated smoking at later ages than did White/Caucasian youths, and the majority of them (65%) began as young adults (Trinidad, Gilpin, Lee, & Pierce, 2004).

Our previous study also supported the claim that a low smoking rate during adolescence does not necessarily mean low susceptibility to future tobacco use. We conducted a secondary analysis in a bi-ethnic sample of White/Caucasian and Chinese-Canadian non-smokers in grade 10 and 11 to examine whether or not ethnicity affects their susceptibility to smoking. The sample

of our study was the non-smoker sub-sample of a total 3,280 students who participated in the British Columbia Youth Survey on Smoking and Health (BCYSOSH) in 2001/2002.

Susceptibility to smoking was conceptualized as a cognitive predisposition to smoking, which was characterized by a lack of a firm commitment not to smoke in the future (Pierce, Farkas, Evans, & Gilpin, 1995). Although for the total sample, the smoking rate was lower for Chinese-Canadian adolescents than for White/Caucasian adolescents (Johnson et al., 2004), no difference was found in the prevalence of susceptibility to smoking between the two ethnic groups of non-smokers. Chinese adolescent non-smokers were at the same degree of risk for future tobacco use as were their counterparts (Chen, Bottorff, Johnson, Saewyc, & Zumbo, 2008).

Given the ethnic differences in smoking behaviour, researchers have begun to examine how the distinctive characteristics of an ethnic group's culture can influence their thoughts and feelings about smoking and their habits in using or not using tobacco (Nichter, 2003; Unger, et al., 2003). Culture has been defined as a dynamic system of shared ideas, and system of concepts, rules, and meanings that underlie and are expressed by the ways in which humans live (Keesing, 1985). Unger et al. (2003) argued that the reasons for using tobacco, the meanings of tobacco use, and the ways of avoiding tobacco use are determined to a large degree by the cultural context. Culture influences people's smoking behaviour by constructing the social norms and values of tobacco use, and by shaping people's smoking-related attitudes, ideas, and beliefs. In addition, as Kleinman and Benson (2006) argued, culture is not static - it is constantly changing and responding to shifting environments and circumstances. For adolescents from ethnic minority

groups, such as Chinese adolescents in North America, the intergenerational differences in the views about smoking between teens and their parents, and the interactions between the original and the mainstream cultures involving smoking also need to be considered (Asbridge, Tanner, & Wortley, 2005; Ellickson, Orlando, Tucker, & Klein, 2004; Hahn, Lahiff, & Guterman, 2004).

Although researchers realize the important role that culture plays in shaping adolescents' tobacco use, research on this topic is far from thorough. Two limitations are observed in the existing literature. First, most studies that include ethnicity/culture in the research are epidemiological in nature. Despite highlighting the different patterns of tobacco use among ethnic groups, these survey studies are less successful in providing theoretical explanations for the unique smoking patterns of adolescents in certain ethnic groups (Cheng, 2001; Gittelsohn, Roche, Alexander, Tassler, 2001). Tobacco use or non-use is a "social practice" (Poland et al., 2006), and a better understanding of the protective factors and risk factors of smoking in ethnic groups is best derived from the experiences of young people as related by their own words. Through these 'thick' or context-rich descriptions, researchers can gain insight into cultural meanings attached to smoking behavior by the specific ethnic group (Alexander, Allen, Crawford, & McCormick, 1999). Second, limitations exist in using 'Asian adolescents' as a category in the research on ethnic discrepancy in smoking. The underlying assumption for the use of this construct is that adolescents in this group share common cultures, norms, beliefs, and patterns of smoking. Nevertheless, studies that focus on subgroup comparisons within this broad category reveal striking differences (Chen, Unger, Cruz, & Johnson, 1999; Fuligni, 1998; Willgerodt & Thompson, 2006). For example, in one study, the authors conducted subgroup-specific analyses

within the 'Asian-American' adolescent group and found that Filipino adolescents had the highest 30-day smoking rate, followed by Koreans and Japanese. Chinese teens had the lowest rate, which was two-times lower than Filipinos (Chen, et al., 1999). Instead of treating Asian adolescents as a homogenous group, they ought to be studied separately, since each ethnic subgroup has its unique language, cultural heritage, and ethnic identity (Hsia & Spruijt-Metz, 2003).

In this study, we focused on Chinese adolescent non-smokers living in BC, Canada and used a qualitative research method of focus groups, to enhance our understanding of how an ethnic group's culture might influence teen tobacco use. We were specifically interested in which factors might keep the teens away from cigarette smoking and which factors might put them at risk for future tobacco use. The ultimate purpose of this study was to generate new ideas for the development of culturally tailored smoking prevention strategies for adolescents with a Chinese cultural background.

Methods

In this study, we used focus groups to capture a range of perspectives and experiences of adolescent non-smokers with a Chinese cultural background. As Hughes and DuMont (1993) have noted, focus groups have two strengths that make them particularly useful for understanding experiences and perspectives of a cultural group. Focus groups provide researchers with direct access to the language and concepts that participants use to structure their experiences, and to think and talk about a designated topic. The interactions between focus group participants help to identify cultural knowledge that is shared among group members as well as

to appreciate the range of different experiences of the individuals within a group (Freeman, 2006; Hughes & DuMont, 1993). The rich and detailed data provided by focus groups about people's perceptions, thoughts, feelings, and impressions can bring researchers to a fuller understanding of a cultural group (Steward & Shamdasani, 1990).

Procedures

In our previous quantitative analysis, we examined the susceptibility of grade 10 and 11 students. As a complement, in this study, we selected participants who: (1) lived in the City of Vancouver; (2) were in grade 10 or 11; (3) reported having a Chinese cultural background; and (4) reported they never smoked, or if they had smoked, they had not smoked in the past 30 days and had not smoked more than 25 cigarettes in their lifetime. The youth were recruited from two secondary schools from two different school districts in the City of Vancouver, BC. A variety of strategies were used for the recruitment, including flyers, posters and word of mouth advertising (see Appendix 1 for a sample recruitment poster). Efforts were made to include not only individuals who had never smoked, but also those who had puffed or experimented with cigarettes. The first participant recruited in each school was invited to act as an assistant in recruiting additional participants. The assistants helped in distributing invitation letters (written in English at a grade 6 reading level), teen assent forms (written in English at a grade 6 reading level) and parental consent forms (written in both English and Chinese) to those teens who were interested in participating, and asked their permission to be contacted by the researchers (see Appendices 2, 3 and 4). Three or four days before a focus group, one of the researchers contacted the potential participants, explained the overall purpose and content of the research

project, answered their questions or their parents' questions about the study, and confirmed whether or not they met the selection criteria. One day before the focus group, a researcher contacted the participants again to remind them that the focus group was being held the next day, to inform them about the location of the focus group, and to remind them to sign and bring the consent forms for participation. Participants were recruited for four focus groups, one group of boys, and one group of girls, from each of the two secondary schools. Boys and girls were interviewed separately since each gender might have distinctive views about tobacco use and might respond differently in group situations. The number of participants in the groups ranged from 4 to 7. In total, 24 participants took part in the study. This study was granted approval by the Behavioural Research Ethics Board of the University of British Columbia (see Appendix 5).

Data collection

Each of the focus groups was scheduled on a school day, 20 minutes after the last class of the day, and conducted in a classroom. Before the start of the focus group, participants were asked to hand in the signed teen assent form and their parental consent form. They were also asked to complete a short questionnaire which included questions about their demographics, smoking in their environment (such as parental smoking, sibling smoking, and friend's smoking), previous smoking experience, and susceptibility to smoking (see Appendix 6). Susceptibility to smoking was measured with two questions: one asked teens, "At any time during the next year, do you think you will smoke a cigarette?" The other question asked, "If one of your best friends were to offer you a cigarette, would you smoke it?" Participants responded to the two questions on a scale ranging from definitely yes, probably yes, probably not to definitely not. Only those

who responded “definitely not” for *both* questions were defined as “not susceptible”, while those who gave any other answers were defined as “susceptible” (Pierce et al., 1996; Pierce et al., 1995).

The first author of this paper was the moderator for all focus groups. An assistant observed the group dynamics and took detailed field notes. Both the moderator and the assistant were bilingual and bicultural. A focus group interview guide was developed by the research team and used as the main tool for data collection. It consisted of a list of open-ended questions that focused on four major areas for discussion: (1) the teen’s experience of being a non-smoker; (2) their reasons for refraining from smoking during their adolescence; (3) cultural factors that they thought may protect Chinese youths from smoking; and (4) their explanations for the quantitative study findings that Chinese-Canadian adolescents have the same rate of susceptibility to smoking as do White/Caucasian adolescents (see Appendix 7). The language used in the focus group interviews depended on the participants’ preferences. English was used in three focus groups while Mandarin was used in one focus group (the 2nd group with four girls whose families had immigrated from China). Each focus group interview took about 90 minutes, and was audiotape recorded. All participants received a \$15 gift certificate at the end of the focus group in appreciation for their time and contribution.

The first author transcribed the interviews verbatim, and translated the one Chinese interview into English. The research assistant who helped in the focus groups compared the transcripts with the audio-taped interviews to ensure accuracy, and conducted the back translation to ensure that the interview data were correctly translated.

Data analysis

In this study, the data analysis was guided by strategies suggested by Coffey and Atkinson (1996), Flick (2006), and Morse and Field (1995). Members of the research team read the transcripts to become familiar with the data, gain an understanding of the contexts of the focus groups, and become immersed in the experiences of participants. The first author of this paper then performed a line-by-line coding to identify initial elements appearing in the data. Next, the research team examined the initial elements and grouped them into thematic coding categories. A coding scheme, composed of the thematic coding categories, was developed by the research team. To achieve the consensus coding, each focus group transcript was coded by two individual researchers, who then compared the coding, discussed any discrepancies, and arrived at an agreement. Transcripts and consensus codes were entered into Atlas.ti – a software program to assist in the analysis by storing, retrieving and displaying data.

Once the data were sorted into manageable “chunks” through coding, we began the process of data interpretation. We first printed out all of the data for each particular code, then explored the patterns within codes or among codes. The patterns found within codes or between codes finally formed the major themes of this study.

Findings

Of the total of 24 participants, 13 were boys and 11 were girls. The participants were 16 years old ($n = 14$) or 17 years old ($n = 9$), except for one who was 18 years old. One-third of the participants were born in China, and one-third born in Hong Kong. Among the remaining participants, three were born in Taiwan, and five were born in Canada. None of the teens’ parents

were born in Canada. Most of the participants (n = 20) had been living in Canada for more than five years. More boys than girls had puff experiences: 5 of 13 boys had tried cigarettes before, while 2 of 9 girls had tried cigarettes before. Among the participants, 7 were found to be susceptible to smoking, while 17 were not susceptible. Table 3-1 summarizes the characteristics of the focus group participants.

Table 3-1: Characteristics of focus group participants (focus groups n = 4; participants n = 24)

	Group 1	Group 2	Group 3	Group 4	Total
Gender					
Boys	6	0	7	0	13
Girls	0	4	0	7	11
Age					
16 yrs	1	3	6	4	14
17 yrs	4	1	1	3	9
18 yrs	1	0	0	0	1
Place of Birth					
China	1	4	2	1	8
Hong Kong	2	0	1	5	8
Taiwan	1	0	1	1	3
Canada	2	0	3	0	5
Years in Canada					

	Group 1	Group 2	Group 3	Group 4	Total
5 yrs or less	2	2	0	0	4
6-10 yrs	1	2	3	4	10
More than 10 yrs	3	0	4	3	10
Puff Experience					
Yes	4	2	1	0	7
No	2	2	6	7	17
Susceptible to Smoking					
Yes	2	2	2	1	7
No	4	2	5	6	17

Establishing a non-smoking identity

As non-smokers, the participants in the focus groups clearly differentiated themselves from other teens who smoked. One participant emphatically stated: “There’s just a natural boundary between the smokers and the non-smokers.” (Group 4, girls). This view was held by most of the participants:

When we’re at school, usually we’re just hanging out with our friends. They are people that don’t smoke. If I walk by the smoking pit area in our school, then you can kind of, you just feel rather weird. Those people are kind of, like from another group we don’t belong (Group 4, girls).

This sense of belonging, or not belonging, echoes Eiser et al.'s (1991) suggestion that adolescents tend to choose as friends those who are similar to themselves. Most teens in this study reported that they had no connections or tried to have no connections with smokers in their school. Even though they realized that a lot of the people around them smoked, this did not concern them. One participant explained, "It's fine, though, because those people who are close to me don't smoke." (Group 2, girls). Hanging out with people who did not smoke was perceived by some teens to be a strategy to keep them away from smoking:

I found it easy to avoid the temptation of smoking by throwing myself with not smoking people. I don't have much interaction with people who smoke. So I found it easy to not be attempted and not be pressured into that situation (Group 3, boys).

The point is - there are many people at my age smoke. But the thing is that it's not likely for you to make friends with them if you don't smoke. At least I won't (Group 2 girls).

Some teens made claims like "I'm very proud of myself" or "I feel good" to express their feelings of being a non-smoker. On the contrary, smokers were often viewed as inferior by these teens. One of them stated, "If I know my friend smokes, I'll have a bad impression of him/her. I'll sort of look down on them as well...because I feel like, I myself have dignity [by being a non-smoker]. If my friends smoke, I'll feel like myself is at the same level as them." (Group 2, girls). In positioning themselves as non-smokers, some teens identified specific characteristics that differentiated them from smokers. For example, one young male student said, "I think they [the teen smokers] think it's cool. But I'm different. I think smoking is, in front of girls, is uncool. But they think smoking in front of girls is more cool." (Group 1, boys). A few participants

thought that the amount of time invested in studying might make a difference to taking up cigarettes.

Some of my friends, they study more, so they spend more time in their houses. So even if they tried, they won't continue cause they're not out often and they don't have chances to smoke. And for the others, they don't study as much, and they're wandering on the street all the time, and if they tried a few cigarettes, whether they like it or not, they have more chances to try more...cause they have more free time outside when they are on the street and doing nothing (Group 1, boys).

Unlike the teens who focused on the differences between non-smokers and smokers, some suggested that the two groups were not much different, because "it's just that we have different habits," or "it's just that they choose to do what they like."

It does not make sense to smoke

When we asked participants for their reasons that kept them from taking up cigarettes, most of them talked about the negative health consequences of smoking. Smoking has a well known impact on health. They learnt this from public education, school programs and their parents. The following comments summarize the teens' perceptions that they have been thoroughly informed about the health effects of tobacco.

In the past few years, there were so many workshops and presentations about lung cancer and smoking, etc. Once I talk about smoking, these things always pop into my mind (Group 2, girls).

They show you everywhere that it's not cool to smoke. They have posters around which

show a woman, like [with] a hole in her throat because she can't breathe because of smoking. And so, that piece from smoking, I don't want that [to] happen (Group 3, boys). I think people just grow up having other people telling them that smoking is bad for your health, and then subconsciously that you know it's bad for you and you know cause everything tells you it's bad (Group 4, girls).

Some teens were strongly influenced by the messages from the anti-smoking education, and simply believed that "there's no reason to smoke," and that "smoking doesn't really get you anywhere;" while other teens seemed curious about cigarettes and had experimented with them to see what smoking might bring them. Their puff experiences, particularly unpleasant sensations, finally led them to believe that smoking was not for them. For example, one participant said, "I felt the taste was very strong. I wanted to throw it away after only one puff. So it doesn't make sense to me to do that again." (Group 2, girls).

Although smoking seemed "pointless" to the participants in this study, they gave us explanations when they were asked about what they thought were the reasons why some teens took up cigarettes. The most frequently given reason across all the focus groups was that smoking could relieve people's stress. Participants perceived that people smoked because they needed cigarettes to relax. A few teens reported that they once asked smokers why they smoked, and that was the answer they gave. Other reasons mentioned by the participants included the idea that smoking helped people to concentrate on their studies, and to control their weight.

The positive influence of peers

For the participants in this study, peer pressure appeared to be an important influence, but in a positive way. When discussing the peer pressure to smoke, one teen stated,

I think on the contrary, there is peer pressure for *not* smoking. I have friends whose friends are smokers. They don't like it. So when we mentioned smoking, they would tell me *not* to do that. They peer pressured me *not* to do that (Group 1, boys).

Many teens agreed about the pressure not to smoke. One male participant who did not touch cigarettes explained, "My friends won't like it if they know I smoke." (Group 3, boys). Similarly, a female participant stated, "If I start smoking, my friends will probably be really disappointed." (Group 4, girls).

It seems that the non-smoking teens in this study shared common values with their non-smoker friends, that is, smoking is wrong, it's not a thing that a "good" teen should do. These teens kept themselves away from smoking so they would be accepted by their peers. The contrast between "good" and "bad" teens is described in the following quotations.

If you're walking on the street and you're smoking, and if your friends see you smoke, they will think [of] you differently. They will think you're *not a good boy*. Especially they will think, they will not accept you. They'll think you [of] differently. And they will, like, keep [their] distance from you (Group 1, boys).

When you smoke, they [friends] will look negatively toward you. Like, oh, you're smoker, *you must be bad* (Group 3, boys).

None of the teens in this study reported that they had ever been pressured to smoke. One

participant described his experience: “Once in grade 7, I was like, these guys had a package of smoke, and they offered me one. But I didn’t find it hard to refuse. So it’s like, no, I don’t want one. It’s not really hard to say no.” (Group 1, boys). A few other teens had similar experiences and agreed that teen smokers actually respected their decision to not smoke. One male participant explained, “I don’t think there’s much pressure when your friends ask you to smoke. They actually respect you. It’s not like that they are seriously pressuring you to do what they do. It’s more like something they want to try together, but if you don’t want to, they don’t care.” (Group 1, boys). Although the teens in this study rejected the idea that they were ever pressured to smoke, it does not necessarily mean that they were immune to smoking influences. One participant expressed uncertainty about his ability to deal with peer pressure to smoke:

We’ve never been pressured to accept the smokes, we’re not. But you never know whether or not you’re actually going to be pressured in the future. We don’t know how we will act under pressure - that specific pressure. So, it’s kind of hard to say. There is always a possibility (Group 3, boys).

The influence of Chinese parents

The participants agreed that parents had a significant influence on a Chinese teen’s decision to be a non-smoker. One girl stated,

Parents are one of the reasons why you don’t want to smoke, because you know your parents will be against it if you smoke. If your parents are not against it, the whole judgement will be different. But everyone knows that their parents will be against it (Group 2, girls).

Similar comments were often heard from all of the focus group participants, even from teens whose parents smoked. For example, one boy said, “My mom smokes actually, but she’s automatically against me smoking. So whenever I see her smoking, she’ll remind me, oh, just because I’m smoking doesn’t mean you should smoke. You are not allowed to smoke.” (Group 3, boys).

The teens gave various explanations when they were asked why they followed their parents’ expectations. One reason, given by many participants, was respect. As one participant commented, “I think in our education we are told to at least respect what your parents, or people who are older than me, [since] they are generally considered as to be having more knowledge than you do.” (Group 1, boys). The respect for parents was reinforced when teens realized that what their parents were doing was for their “own good.” One boy stated, “So you learn that, oh, they’re actually helping us. They tend to make you follow the good path.” (Group 3, boys). Also, because of the respect, the teens would rather obey their parents even though disagreements erupted between them:

I think [the] Chinese way of raising a kid is, like, they’re telling you what you have to do is to respect. They teach it to you from like, when you’re very young. They drill it into your head. And what that comes to me is when you respect them, you do what they tell you to do. And I guess, a lot of time is not so much that teenagers we don’t ask why, but um, we can *sacrifice* what we want in order to do what our parents want, because we have that respect for them (Group 3, boys).

The Chinese teens also seriously considered their parents’ warning to not smoke because

they were afraid of the consequences they would face if they took up smoking. They perceived that if they smoked, their parents would “get mad” or “yell” at them. Others feared possible “hardship punishment,” or being asked to leave home. In this study, the girls mostly spoke about the consequences of smoking and their fear about their parent’s condemnation.

The belief that teens should listen to their parents was viewed as a part of the Chinese culture. One boy said, “Chinese people seem to listen to their parents more. This is how we are. It’s our culture, like we learn to listen to our parents. So like when they say not to smoke, then you know not to smoke.” (Group 3, boys). At the same time, these teens often compared the parenting style in the Chinese culture to that of other cultures with regards to the specific issue of smoking. One participant explained,

Chinese parenting is very like, um, this is wrong, and like... you can’t do this, it’s wrong. But while like... Caucasian parenting [there] is big difference as I understand it. It’s like you can do it but then you have to take the consequence. So it’s not that, you can’t smoke, it’s that, yeah sure, go ahead, then you’re going to get addicted, and then you’re going to have cancer in some place. Yeah, a different style of parenting (Group 1, boys).

The participants perceived that Chinese parents simply tell their children the right choice and what they should do, while parents in other cultures, for example, Caucasian parents, tend to let their children make their own choices. One girl stated, “They let their children choose their own route, and like, actually let them make the mistakes, and learn from it. But Chinese culture, Chinese parents are usually just, like... try to prevent you from making mistakes.” (Group 4, girls).

Besides parenting styles, some teens in the study also spoke about another specific concern that influenced Chinese parents - the possibility of losing face if their children failed to follow their directives. One boy commented:

Chinese parents do have that belief that the kid somehow belongs to the parents, whereas a White parent would say, oh, you're your own person. I would like you to make your own mistake, I would like you to feel your own success. Whereas Asian parents, your success is my glory, and your failure is my shame, you know. What I'm trying to say is whatever you do reflects them, and um, I guess they lose face if they feel like you failed (Group 3, boys).

According to the participants, when Chinese teens smoke, it is not viewed as the teen's personal choice or personal mistake, but rather as a choice that reflects the family. As one participant explained, "I'm pretty much the only child, only male child in my family. Cause they really only have one son to present to everyone. If they present the son as a smoker, it's so bad, it's not going to look good for them." (Group 3, boys).

Chinese parents also influence their teens to abstain from smoking through their supervision. The teens reported that because most of the time they are under parental supervision, their parents know what is going on in their lives. Some teens even reported their parents deciding about when they should study and when they should play, so that the teens found it easier to avoid situations where they might be tempted to smoke.

Smoking is for adults

During the focus group interviews, participants were asked to provide their ideas about our findings from our previous study on the susceptibility to smoking, in which we found that even

though Chinese teens had a substantially lower current smoking prevalence than did White/Caucasian teens, they had the same rate of susceptibility for future smoking as did their White/Caucasian counterparts. Among the various explanations offered by the participants, one account was given consistently across all the focus groups, namely: smoking is not a suitable behaviour for adolescents, but may be tried when they grow up to young adults:

I think some Asian teens, Chinese teens may not think smoking is a bad thing. It's just not suitable for them. They may think that it's not suitable because of their age. It will become more suitable for them to smoke after five years. Their reason for not smoking is not because of the health reasons, it's because they think smoking is not a thing they should do at their current age. They may think, well, after five years, they don't have any reasons to refuse smoking (Group 2, girls).

Many participants acknowledged that Chinese teens have a limited chance to experiment with cigarettes when they are living at home. When they move away from home, however, they might consider tobacco use. For example, one boy commented:

When you get to move on to university, or you go somewhere for university, you get more independence, and perhaps there's something you start trying or because you probably did not have as much as chance to try when you were living with your parents (Group 1, boys).

This explanation is based on the notion of independence and freedom that they will have when they grow up. For these teens, independence means something, and as one teen stated,

You can make your own decision, you earn your own money. You can decide how to use your money. It's not like when you are in high school, you are still dependent on your

parents. If you smoke, you have to use their money. When you're in university, you will have more freedom (Group 2, girls).

Discussion

To date, our knowledge about non-smoking adolescents has been primarily obtained by studying this group indirectly as the reference group of smoking adolescents. The general assumption has been that becoming a smoker is a complex process while remaining a non-smoker can simply be explained by the absence of risk factors. Attention tends to be placed on the smoking problem among adolescents, but what is ignored are the non-smoking teens and the factors that support their resistance to smoking. In this qualitative study, with the focus on Chinese-Canadian adolescent non-smokers, we gained a deeper understanding of the adolescents' experiences of being non-smokers, with reference to this specific ethnic group.

Chinese-Canadian adolescent non-smokers in this study were found to have a strong self-identity as non-smokers. They reported that they tended to befriend other non-smokers, and used the strategy of "hanging-out" with non-smokers to keep themselves away from smoking. Their experiences were consistent with the findings of other studies that targeted Caucasian teens or teens from other ethnic backgrounds (Dunn & Johnson, 2001; Ellickson, Perlman & Klein, 2003; Holowaty, Feldman, Harvey & Short, 2000). Most of the participants in this study also reported that they had not been pressured by other peers to smoke, rather, they had been encouraged to *not* smoke. The idea of smoking was viewed as unacceptable and as a threat to relationships with friends who did not smoke. According to Social Identity Theory (Abrams & Hogg, 1990), the development of homogeneity within adolescent peer groups is a process of

integration of social identity (i.e., I belong to the non-smoking group) into the teen's concepts of self (i.e., I am a non-smoker). In peer groups, where status as a 'non-smoker' is central to the social identity of the group, members of the group are likely to be similar to one another in their smoking habits (Kobus, 2003). Our findings indicated that norms and behaviours of peers are important determinants for abstinence from tobacco use among Chinese-Canadian teens. Befriending non-smokers or anti-smoking peers was viewed as a protective factor from using cigarettes. Although we cannot rule out, as Asbridge and colleagues (2005) pointed out, whether the protective effect is a selection effect of Chinese-Canadian teens befriending non-smoking peers or whether they are inclined to befriend peers from the same ethnic group, our findings should encourage tobacco control scholars to consider drawing on the strengths of the non-smoker's social identity in supporting adolescents to be non-smokers.

By undertaking this focus group study with Chinese-Canadian adolescents, we also gained an understanding of the impacts of Chinese culture on adolescent smoking behaviour. The findings of this study revealed some unique cultural characteristics of this ethnic group regarding tobacco use (and non-use), and indicated protective factors and risk factors that are related to the cultural characteristics.

When speaking about ethnic cultural groups, we usually refer to social groups that share a common cultural heritage with a common language, values, beliefs, customs and attitudes (Scambler, 1997). Chinese culture is commonly thought to be a collectivist culture. According to Triandis et al., collectivists pay more attention to groups, particularly family. The social behaviours of the group members are largely regulated by group norms. Furthermore, in a

collectivist culture, the emphasis is on hierarchy, obedience and respect for authority. Harmony and saving face are important attributes in a collectivist culture (Triandis, McCusker & Hui, 1990). Growing up in this cultural context, Chinese youth are socialized to accept norms related to family loyalty, responsiveness to family expectations and conformity to parents' wishes (Peterson, Cobas, Bush, Supple, & Wilson, 2004). The findings of this study highlight the critical importance of the collectivist culture in influencing Chinese-Canadian teens to be non-smokers. The participants in all four focus groups consistently reported that they were told by their parents to stay away from cigarettes. To respect their parents' requests was a major reason for them to abstain from smoking. Smoking behaviour was viewed by the participants as a deviant act that might disappoint their parents or bring shame to the family. Obviously, the decisions of Chinese-Canadian adolescents to smoke or not smoke was not just influenced by their personal likes or dislikes, but also by the collectivist values they held. In this sense, collectivist culture plays a protective role in terms of adolescent smoking initiation. It also partly explains the smoking rates among Chinese adolescents that are lower than those of many other ethnic groups, where collectivism is not the central culture.

Parenting style is another important aspect of an ethnic group's culture. In the focus groups, participants often compared the Chinese parenting style to the Western parenting style, and reported that parenting style influences adolescent smoking behaviour. They perceived that Chinese parents usually attempt to control their children according to absolute standards (e.g., don't smoke) and place a high value on obedience (e.g., you have to listen to your parents); while Caucasian parents tend to let their children make their own choices and their own mistakes,

and to learn from them. Parenting style is a function of two behavioural dimensions: parental demandingness and parental responsiveness (Baumrind, 1989). Baumrind classified parenting style into three patterns – authoritative, authoritarian, and permissive. The authoritarian parenting style is widely practiced by Chinese parents, and is characterized by unquestioning obedience and respect for authority, while discouraging two-way parent-child communication (Lieber, Fung, & Leung, 2006).

The findings of this study suggest that authoritarian parenting may be a double-edge sword with regards to smoking among Chinese youths. On one hand, firm discipline, strict obedience, and high levels of supervision appear to be important for preventing Chinese adolescents from taking up smoking behaviours. On the other hand, emphasizing obedience and conformity to parents' wishes, the authoritarian parenting style may limit the autonomy of Chinese teens for making their own decisions. Once the young people move away from home, they are more likely to exhibit behaviours that were not allowed when they were living with their parents. As reported by the teens in this study, when Chinese teens enter into adulthood and become more independent from their parents, smoking may be a new behaviour that they are willing to try. Authoritarian parenting, thus, may be a risk factor that increases Chinese teens susceptibility to engage in smoking behaviours.

The findings of this study have implications for the field of smoking prevention. First, peer pressure to not smoke was an important factor in keeping participants away from smoking. In contrast to prevention efforts that are focused on resisting the peer pressure to smoke, the strength of peer pressure for not smoking has been largely overlooked. Strategies for forming a

“non-smoker” social identity might well be integrated into the prevention programs so as to motivate individual teens to maintain a non-smoking behaviour that is salient to this social identity. Second, quantitative studies have found different patterns of tobacco use among adolescents who have been raised in different cultural contexts. Nevertheless, these studies fail to reveal how the distinctive characteristics of an ethnic group’s culture might be protecting or exposing this group to particular types of risk (Nichter, 2003). Our study addressed this gap in knowledge by suggesting how a collectivist culture might influence the Chinese adolescents’ abstinence from smoking. Third, parenting styles and respect for authority are variables that were highlighted in the Surgeon General’s report in relation to adolescent tobacco use (USDHHS, 1994). The findings of this study suggest that Chinese parents play an important role in their children’s abstinence from smoking. Parental influence may have both protective effects and a risk-increasing effect for future tobacco use. The implications are complex. On one hand, the findings again supported the notion of including parents in the smoking prevention effort. Encouraging parents to send a clear anti-smoking message to their child may help keep their children away from cigarettes. On the other hand, the long-term effects of the parental influences are not fully understood. Do the protective effects of an authoritarian parenting become weaker when teens enter youth adulthood, and is authoritarian parenting associated with increased smoking in young adulthood? These questions need to be investigated further with research. Fourth, when individuals do not initiate their smoking in adolescence, they are often assumed to have less likelihood of smoking later in life. Given that teens of Chinese ethnicity have a lower smoking rate than teens in many other ethnic groups, they are thought to have a low risk for

future smoking. Our findings, however, challenge this assumption. Although the majority of Chinese teens are non-smokers during adolescence, some do not have a firm commitment to not smoke, and may take up cigarettes in the future. Further research is required to carefully track the tobacco use practices of this ethnic group as they reach adulthood.

This study also makes suggestions for the conceptualization of susceptibility to smoking. Susceptibility to smoking has been conceptualized to include two aspects – the subjective estimation of smoking in the future (e.g., adolescents were asked “Do you think you will be smoking cigarettes one year from now?”) and the self-efficacy for being a non-smoking (e.g., adolescents were asked “If one of your best friends were to offer you a cigarette, would you smoke it?”) (Kremers, Mudde, & De Vries, 2001). The underlying assumption for this conceptualization is that to engage in cigarette smoking or staying tobacco free is a personal choice. The decision is made by the teens themselves. However, the findings of this study suggest that for Chinese teens who are raised in a collectivist culture, their decision to smoke or not smoke is largely influenced by the norms, values, and beliefs of that culture, as well as by the expectations of their parents. Consequently, the youth susceptibility to smoking should be considered in a broader psychological, social and cultural context.

Conclusion

Although adolescents from Chinese ethnic background have been often reported to have lower smoking prevalence rates than White/Caucasian adolescents, our previous study indicated that Chinese-Canadian adolescents have the same rate of susceptibility to smoking as do their White/Caucasian counterparts. In this study, the focus group data with the four groups of

Chinese-Canadian non-smoking adolescents deepened our understanding of teens in this ethnic group in relation to the factors that may protect them from smoking, or increase their risk for being susceptible to future smoking behaviours. From the findings, the strong self-identity as non-smokers and the knowledge of health-related consequences of smoking are important reasons for Chinese teens' abstinence from tobacco. The collectivist culture and authoritarian parenting style seem to have effects on these teens' smoking behavior. The findings also highlighted the need to consider youth susceptibility to smoking in a broader social and cultural context.

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Chapter IV

Chinese-Canadian Adolescents' Perspectives Related to "Susceptibility to Smoking": Toward a Clearer Operationalization of the Concept*

Background

In relation to studies on tobacco use, the population under study is traditionally categorized into behavioral groups, such as non-smokers, experimenters, and regular smokers. Non-smoking adolescents, however, can also be categorized into different groups based on their cognitive characteristics (Kremers, De Vries, Mudde, & Candel, 2004). Some adolescents currently are non-smokers, but may be cognitively predisposed or motivated to start smoking in the future. To identify which adolescents may entertain the possibility of smoking in the future, Pierce and colleagues introduced a measure of cognitive predisposition to smoking called susceptibility (Pierce, Farkas, Evans, & Gilpin, 1995).

According to Pierce et al. (1995), susceptibility to smoking identifies those adolescents who have not made a firm commitment to not smoke cigarettes. These researchers developed a series of questions to identify which youths might be susceptible to future smoking. To be classified as not susceptible, a respondent would answer "no" to the question: "Do you think that you will try a cigarette soon?", and "definitely not" to both of the questions: "If one of your best friends were to offer you a cigarette, would you smoke it?" and "Do you think you will be smoking cigarettes

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one year from now?" Respondents who provide any other answers are classified as susceptible. The susceptibility measure was designed to differentiate those teens who possess a firm resolve not to smoke in the future from teens who either intend to smoke or are uncertain about their future smoking (Unger et al., 1997)

Since the concept of susceptibility was introduced in 1995, it has been measured in a few studies. In a previous study, we compared the rate of susceptibility to smoking between grade 10 and 11 White/Caucasian teens and Chinese-Canadian teens who had been selected from 13 schools in two areas of British Columbia, Canada. Even though it was consistently reported that Chinese teens in North America have lower smoking rates than do White/Caucasian teens, the rate of susceptibility to smoking among Chinese-Canadians was found to be as high as that of their White/Caucasian counterparts (Chen, Bottorff, Johnson, Saewyc, & Zumbo, 2008). As a possible explanation, some factors may put Chinese Canadian teens at a relatively high risk for future smoking. Another explanation might be a measurement artifact, where cultural factors lead Chinese teens to answer the questions about susceptibility to smoking in a different way than White/Caucasians so that they are incorrectly categorized as susceptible.

As Marsella and colleagues (2000) pointed out, the transposing of assessment instruments across cultures may not be appropriate without having a full understanding of the nature and meaning of the concepts under study and the measurement approaches to be used. For example, in measuring the susceptibility to smoking among Chinese-Canadian teens, it was unknown whether, because of their cultural background, the teens might interpret and answer the measurement items differently than was intended in the measure's original conceptualization and

operationalization. Thus, to gain a better understanding of the measurement issues for susceptibility to smoking among Chinese teens, we conducted a qualitative focus group study, to explore the perspectives of these teens that would be relevant for operationalizing their susceptibility to smoking.

Methods

We recruited 24 Chinese-Canadian teens for four focus groups: two included girls only and two included boys only. Each focus group had 4 to 7 participants. Prior to the focus groups, participants were asked to complete a short survey that included demographic questions and two items that measured susceptibility to smoking. One question was: “At any time during the next year, do you think you will smoke a cigarette?” the other question was: “If one of your best friends were to offer you a cigarette, would you smoke it?” A four-point scale – definitely yes, probably yes, probably not and definitely not, was used for both questions. The teens who responded “definitely not” to both of the questions were categorized as being not susceptible, while those who gave any other responses were categorized as being susceptible.

During the focus group interviews, we distributed a hand-out (see Appendix 8) in which we presented two figures – one was the bar chart showing the rates of susceptibility to smoking among White/Caucasian and Chinese Canadian teens, respectively. These rates were obtained from our previous quantitative study. Another figure was the bar chart for current smoking rates of these two ethnic groups, which had been adopted from a survey study using the same sample (Johnson et al., 2004). In the hand-out, Chinese-Canadian teens had a lower smoking rate, compared to that of White/Caucasian teens (8% vs. 18%), but had a similar, high rate of

susceptibility to smoking (28.1% vs. 27.3%). Participants were asked to share their thoughts and to provide possible explanations for these findings. They were also asked to describe any circumstances where they might have been tempted to smoke.

The details of the procedures for participant recruitment, data collection using focus group interviews, and analysis of interview data were reported elsewhere (Chapter III).

Findings

Among the 24 focus group participants, 13 were boys and 11 were girls. The participants were 16 years old (n = 14), 17 years old (n = 9), and 18 years old (n = 1). Based on their responses to the two questions measuring susceptibility to smoking, 7 were identified as being susceptible, 4 of whom were boys and 3 were girls. In addition, 7 participants mentioned circumstances in which they might take up cigarettes in the future (see Appendix 9). The participants in the fourth focus group were different from those in other groups. When they were asked whether they could think of any circumstances under which they might take up cigarettes, every one in that group responded to the question with the same answer – they didn't think they could think of any circumstances.

Three major themes that were related to the measurement of susceptibility to smoking among Chinese-Canadian teens were found in an analysis of the focus group data. We first report these three themes, then report our observations related to the compatibility between being susceptible and reporting circumstances of possible future smoking.

Who knows the future?

The interviewed teens agreed that it was impossible to be entirely sure about one's chances of smoking in the future. We explained to the teens that to be considered not susceptible, a teen would have to choose "definitely not" to all of the questions that measured smoking susceptibility. A few participants commented that "definitely not" seemed to be too definite a choice, since nobody can be certain about their future situation. For example one teen commented:

When you say, "Do you think you're going to smoke in the next year?" and at the moment I think I won't smoke. But I'm really not sure because in the future, you can't predict the future. It's like asking, "Will the world explode in the next five minutes?" But you never know, right? Yeah, I think I'll write "probably not." It's very unlikely to explode. But you cannot be sure (Focus group 1, boys).

Some of the participants explained that due to a sense of uncertainty, teens might choose to leave themselves with some possibility of smoking in the future, rather than indicating their firm commitment to not smoke. The following quote is from a focus group of teen boys (Focus group 3):

P6: I think this might be a part of the reason why the Chinese susceptibility suddenly goes up because you know, a lot of times we don't want to say, oh, I know I'll never smoke because we leave ourselves a little bit of space that...

P3: You always want to say maybe.

P6: They're not sure whether or not they will. They know that they probably won't. Then

they'd like to choose B (probably not) cause, if you're gonna ask me that question, I don't know what's going to happen.

P2: Why don't just give yourself more room?

P4: Yeah.

Although the participants were asked to provide possible explanations for Chinese-Canadians having the same rate of susceptibility to smoking as White/Caucasian teens, when they discussed the teens' uncertainty about their future and their allowance for the possibility of future smoking, they did not specify that their explanations applied only to Chinese-Canadian teens. One participant explicitly stated that:

There might not be a difference between Caucasian and Chinese because as teens, it doesn't matter what culture we are. In the future, it's like... we basically think of the future the same. So anything in the future we do or we might not do, we're not sure we'll do it or not (Focus group 1, boys).

Avoiding absolute answers

Unlike the above comments, some participants mentioned that Chinese people had their own way to answer survey questions. They explained that Chinese-Canadian teens might be found to have a rate of susceptibility to smoking that was similar to that of their White/Caucasian counterparts because they tended to avoid choosing absolute answers of "definitely not" to questions that measure susceptibility, and consequently, they would be categorized into the susceptible group. For example, one teen girl commented:

When we answer multiple choice questions, we don't like to choose the extreme answers.

We tend to pick those that are kind of away from the extreme answers. It makes us emotionally feel better (Focus group 2, girls).

The reluctance to use extreme response options was perceived by the participants as one of the cultural characteristics of the Chinese ethnic group. They elaborated that this characteristic might be largely influenced by the cultural norms set by the Chinese culture, as one boy participant stated,

Among my understanding, Chinese people are usually more conservative, so they don't like to use absolute statements. Because in their mind it's "definitely not", they might say "probably not", cause they don't want to go like absolutely. They just be more Chinese, I think they should be like, being absolute is not acceptable (Focus group 1, boys).

Smoking – a vague word

The teens also commented that the word "smoking" (without any qualifiers or descriptors) introduced a lack of clarity when used to measure smoking susceptibility. During the focus group interviews, a few participants asked what was meant by 'smoking' or 'smoke'. For example, one participant asked: "When you say "smoke in the future", [do] you mean regular smoker or what?" We explained that it did not necessarily mean regular smoker, and it could be any kind of smoking practice, rather than a specific smoking behavior or habit. Participants also commented about the vague use of the word 'smoking,' and how this vagueness might influence people's understanding of the questions for susceptibility, especially when measuring teens' expectations of smoking in the future.

It [the question measuring susceptibility to smoking] didn't say that you have to be a

regular smoker. You can be just a trier. Many people just tried one or two puffs for their curiosity (Focus group 2, girls).

And another thing I think could have made this survey question a little more helpful is if instead you ask if they're going to smoke or if they're going to become a regular smoker or chain smoker, or something was specific, because I don't know, a teen will think five years is a long time for me to try something, right? I might not necessarily become a smoker, but in the next five years, I might try a cigarette or two (Focus group 3, boys).

The participants' comments suggest that if teens intend trying cigarettes out of curiosity, they may not necessarily be susceptible to future smoking, or in their words, susceptible to becoming regular smokers. From their view, trying a cigarette and smoking were two different concepts. According to one participant, "I think someday I may want to try it [a cigarette]. But I won't become a smoker." (Focus group 2, girls). They also felt that the percentage of teens who were deemed to be susceptible to smoking in our previous quantitative study might have been exaggerated, and suggested that many of them might have only been curious about trying cigarettes.

Circumstances for future smoking and the susceptibility to smoking

Participants were asked to imagine circumstances where they might be tempted to smoke. Seventeen participants reported that they could not think of any circumstances where they would smoke, or that smoking was not possible for them, while the remaining seven participants provided a few examples of likely circumstances. One circumstance that was most often mentioned was experiencing a stressful situation. Some teens mentioned that if they were in a

situation that was stressful, they might consider smoking cigarettes because they believed that smoking can help relax people. For example a boy said:

Because a lot of people say that they do it [smoking] and it's relaxing, like it's, someone says it's not even just the smoke itself, it's a psychological thing. So I guess I could possibly be a smoker if there's some really stressful [thing] then to happen, I don't have any other way to get rid of the stress. If someone offers me a cigarette, then I probably try it (Focus group 3, boys).

Other teens talked about circumstances in which the social functions of smoking might be the reasons for them to take up smoking. For example, another boy said:

I think that probably when you grow up and you're working, you're going to meet a lot of people, have a kind of social connection. And say you're at a party, and there is someone there who might be able to give you a better job, or might be able to give you very important information, and if they offer you smoke or something, I guess that would be when I would take it (Focus group 1, boys).

In this study, we gave a short survey to the participants before each focus group. Two of the questions for measuring susceptibility revealed seven of the participants to be susceptible to smoking. In examining the agreement between survey responses and the focus group responses, we found that five of the seven participants who were identified as being "susceptible" provided additional information about possible circumstance where they might take up smoking in the future, while the other two participants did not indicate any circumstances. According to the survey results, two participants were "not susceptible", however, when in the focus groups, they

indicated that certain circumstances might tempt them to smoke in the future. Both of these circumstances were stress-related.

Discussion

Identifying teens who are at risk for future smoking has been a chief aim of researchers who are developing smoking prevention strategies for youths. The construct of susceptibility to smoking and its measurement were introduced by Pierce and his colleagues for identifying and describing teens who are cognitively predisposed to tobacco use (Pierce, Farkas, Evans, & Gilpin, 1995). Differing from a measure of intention to smoke, which implies making a conscious decision to become smokers, susceptibility to smoking is a more inclusive measure. The measure does not indicate whether or not adolescents are consciously planning to smoke, but, instead, reflects a lack of firm commitment to refrain from smoking. This suggests that adolescents who do not possess a firm resolve to abstain from smoking may take up cigarettes if presented with the opportunity (Unger et al., 1997). This conceptualization of susceptibility to smoking is supported by the data of this study. Some Chinese-Canadian teens were not certain about the possibility of taking up cigarettes in the future. Their uncertainty differentiated them from those teens who were absolutely resistant to smoking. Without having a firm commitment to not smoke, these teens cognitively were open to opportunities for tobacco use in the future. The comments from participants suggested that the susceptibility to smoking meant the same for the Chinese-Canadian adolescents.

Nevertheless, the participants of this study did challenge the operational equivalence of the construct of susceptibility to smoking. Operationalization describes the transition from

interpreting the construct to measuring the construct (Hui & Triandis, 1985). Although the participants agreed that susceptibility meant having no firm commitment to not smoke, some believed that the items measuring susceptibility could mistakenly categorize some teens, who were not susceptible, as being susceptible, because they might avoid giving absolute answers (i.e., “definitely not”) to the questions measuring susceptibility to smoking. Some teens felt that this kind of miscategorization could be the result of ‘cultural distinctiveness’ in the participants’ responses to survey questions, which might explain why Chinese-Canadian teens had the same rate of susceptibility to smoking as did their White/Caucasian counterparts, even though their smoking rate was much lower. The question then surfaces: Is avoiding the absolute answers a unique cultural feature among adolescents with a Chinese cultural background, or are teens less than absolutely sure about non-smoking in the future and therefore choose answers that can more readily accommodate the possibility of future tobacco use?

There is some evidence in the literature to suggest that Chinese respondents may be more reluctant to use extreme response categories and instead use middle-point categories (Chen, Lee, & Stevenson, 1995; Chia, Allred, & Jerzak, 1997; Hamid, Lai, & Cheng, 2001). Some participants’ comments on Chinese people’s tendency to avoid absolute answers echoed the argument that cultural values may exert strong influences towards certain stereotyped forms of response (Ho, 1986). Confucianism, an ancient ethical and philosophical system that has had tremendous influence on Chinese history and culture, has been discussed as one of the possible reasons for the response tendency of the Chinese people. The emphasis of Confucianism on self-moderation, deference, and modesty may promote the tendency to respond at moderate

levels and avoid extreme responses (Hamid, Lai, & Cheng, 2001).

The focus group data along with the evidence in the literature with regard to the unique response style among Chinese people raise questions about using the measure of susceptibility to smoking among Chinese-Canadian adolescents. Before the measure is to be used, we need to examine how the unique response style may play a role in Chinese teens' responses to susceptibility questions, and to what extent the Chinese culture may have influences on these teens who live in a society in which the mainstream culture is different from their culture of origin. One suggestion for future research is to conduct cognitive interviews with Chinese-Canadian teens whereby the explanations of how they interpret the questions and the elaborations regarding how they constructed their answers could be identified (Beatty & Willis, 2007). The verbal material generated by such interviews may help in understanding and improving the operationalization of the measure of susceptibility to smoking among Chinese-Canadian adolescents.

Another criticism made by the participants in this study concerns the use of the word "smoke." They perceived that "smoke" was an ambiguous word, because some teens might attempt to smoke cigarettes, out of curiosity. Experimenting with cigarettes to fulfill their curiosity was perceived to be different from becoming a "real smoker." Therefore, the participants recommended that more specific terms should be used, such as "become a regular smoker," instead of "smoke". However, as smoking prevention researchers, we do not consider the use of "smoke" as being a threat to the validity of the measure; on the contrary, its use reflects the meaning of the susceptibility to smoking construct. The major strength of this

construct is its ability to identify teens who are in an early phase of a sequence of cognitive changes that ultimately results in smoking behavior, and to detect the risk before the smoking behavior actually occurs (Unger, Rohrbach, Howard-Pitney, Ritt-Olson, & Mouttapa, 2001). Curiosity is one of the most frequently given reasons for cigarette experimentation (Sarason, Mankowski, Peterson Jr & Dinh, 1992) and not everyone who has tried cigarettes will become regular smokers. However, it is also the case that the teens who have experiences of experimentation have the greater risk of progression than those who have no experience with smoking (Choi, Pierce, Gilpin, Farkas, & Berry, 1997; Pierce, Distefan, Kaplan & Gilpin, 2005; Van Zundert, Engels, & Van Den Eijinden, 2006). The aim in measuring susceptibility to smoking is to identify, as early as possible, teens who are currently non-smokers but who may have a risk for progressing to experimentation, and then later to becoming regular smokers. Use of the general expression, “smoke,” rather than a phrase like “become a regular smoker” helps to capture those teens who might be at the earliest stages of a smoking progression, so that early prevention programs or interventions can be implemented (Unger et al., 1997).

The teens’ comments about the ambiguity of the word “smoke” indicates the importance in clarifying this term for measuring susceptibility to smoking. While “smoke” is not an unusual term, it can mean different things to adolescents. Some of the participants in this study expressed their uncertainty about the term, and asked if “trying a cigarette” should be interpreted as “smoking.” This ambiguity can greatly undermine the validity of the measure of susceptibility to smoking since respondents can interpret the term “smoking” in various ways. The term “smoking” has been implicitly conceptualized in studies about the susceptibility to smoking to

encompass many types of smoking behaviour, including trying a cigarette. We suggest clarifying the term, by adding a definition of “smoking” in the questions that measure susceptibility to smoking.

In this study, we examined the agreement between susceptibility to smoking with reports by the participants of possible circumstances for smoking in the future. Arguably, if teens have the firm resolve to abstain from smoking they may not be able to think of any circumstance in which they might take up cigarettes; whereas if teens can suggest a circumstance, they might be susceptible to smoking, since they would be cognitively aware of possibilities for smoking in the future. In this study, two participants who were categorized as being not susceptible were still able to indicate some circumstances in which they might take up cigarettes in the future. These findings suggest that the current measurement of susceptibility to smoking may be inadequate for detecting all teens who are susceptible. Thus, our question about circumstances in which he participants might perceive taking up smoking seems to be a useful additional indicator of susceptibility. Adding this item may add to our ability to detect susceptible adolescents and increase the validity of the measurement of susceptibility to smoking. This idea needs to be further tested in quantitative research, with a longitudinal research design that can investigate whether or not the additional item about smoking circumstances can improve the predictive power of the measure of susceptibility to smoking.

Conclusion

As a widely used concept in smoking prevention research, susceptibility to smoking identifies teens in the pre-smoking phase who are at a high risk for future smoking behaviors

(Choi, Pierce, Gilpin, Farkas & Berry, 1997). This study is the first one to examine how the concept of susceptibility to smoking is interpreted by participants, and how Chinese-Canadian adolescents answer the measurement items. The conceptual equivalence of the concept is supported by the data of the study. Although the authors of the paper tend to believe that susceptibility to smoking is equally operationalized among Chinese adolescents, the equivalence needs to be further investigated. The data also suggest that adding an additional indicator - circumstances for future smoking, to the original measure of susceptibility to smoking can help to identify teens who are susceptible but who were overlooked by the original measure. In addition to contributing to the understanding of susceptibility to smoking among a Chinese ethnic group, the methodology of this study may also be useful for research on the cross-cultural equivalence of the concept among other ethnic groups of adolescents.

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Chapter V

Conclusion

Summary

Smoking often starts during a stage in adolescence, when rapid, profound, physical and psychological development occurs (Corbett, 2001). Tobacco use among adolescents is widely recognized as a significant public health problem and its reduction remains a national priority in many countries, including Canada. The essence of smoking prevention among adolescents is to prevent teens from taking up cigarettes. Many authors have conceptualized smoking uptake behaviour in adolescence as progressing through a sequence of developmental stages (e.g., Mayhew, Flay, & Mott, 2000). One of the stages, the preparatory stage, occurs when adolescents begin to think about smoking and start to form knowledge, beliefs and expectations about smoking and its functions. To identify teens who are experiencing this cognitive shift during the smoking uptake continuum, Pierce and colleagues (1995) introduced the concept – susceptibility to smoking - with the aim to detect adolescents who are not strongly committed to not smoke, and who cannot rule out the possibility of smoking in the future.

As discussed in Chapter I, approximately one-fourth of the adolescents in the US and Canada are susceptible to smoking. Repeatedly, the measure of smoking susceptibility has been shown to have a strong association with teens' future smoking behaviours. A few longitudinal studies have also supported the idea that susceptibility to smoking is a strong predictor of smoking experimentation among youths. While susceptible teens have a greater likelihood of

taking up smoking, compared to those who are not susceptible, little is known about the reasons for some teens being susceptible, while others are not. Moreover, the role of ethnicity and cultural background in explaining susceptibility to smoking among adolescents is unclear.

The overarching goal of this research was to understand susceptibility to smoking among Chinese-Canadian adolescents. The research was directed at three primary aims: (1) to document the prevalence rate of susceptibility to smoking among a sample of Canadian non-smoking teens, and to examine the factors that might explain the variation of susceptibility to smoking, with a focus on the influence of ethnicity (White/Caucasian vs. Chinese) on smoking susceptibility; (2) to explore the non-smoking Chinese-Canadian adolescents' views about the protective factors and the risk factors that might lead them to be susceptible to smoking; and (3) to examine the perspectives of Chinese-Canadian teens on the conceptualization and operationalization of the measure of susceptibility to smoking. The research design for this dissertation included both quantitative and qualitative approaches. A quantitative secondary analysis of data from the British Columbia Youth Survey on Smoking and Health in 2001/2002 was employed to achieve the first research aim, and a qualitative focus group method was used to achieve the second and third research aims. The major findings of this dissertation, in response to the three primary aims, are discussed below.

In Chapter II, the data from a sample of 1,870 grade 10 and grade 11 students, who were non-smokers and of either White/Caucasian or Chinese ethnic backgrounds, was examined for the prevalence of susceptibility to smoking, and for detecting factors that might explain the susceptibility. More than one-fourth of the students in the overall sample were found to not have

a firm commitment to not smoke. The Chinese-Canadian adolescents in this study appeared to have a high rate of susceptibility to smoking which was similar to that of their White/Caucasian counterparts, even though the smoking prevalence was lower. This finding led to questions about which factors might explain the Chinese-Canadian non-smoking adolescents' increased risk for future smoking behaviours.

In Chapter III, an analysis of data from four groups, totalling 24 adolescent participants with Chinese ethnic background detected five major themes related to these teens' experiences of remaining tobacco free. Negative attitudes toward smoking, befriending non-smoking teens, being peer-pressured to not smoke and the collectivist cultural perspective were identified as factors that helped Chinese-Canadian teens remain tobacco free. The authoritarian parenting style, which the youth indicated was commonly practiced among Chinese parents, was found to have both positive and negative effects on Chinese adolescents' susceptibility to smoking. Authoritarian parenting style, characterised with firm discipline, strict obedience and high levels of supervision, appeared to play an important role in keep Chinese teens from smoking. However, it might also be related to the increased risk for smoking experimentation among Chinese adolescents when they reach young adulthood and gain their independence from their parents. The findings of the qualitative focus groups enhance our understanding of the role played by an ethnic group's culture with regards to tobacco use among adolescents.

The cultural appropriateness of the measure of susceptibility to smoking has not before been examined in the literature. To address this knowledge gap, the focus group data related to the measurement of the concept of susceptibility were analysed in Chapter IV. This study was aimed

at providing information about the conceptualization and operationalization of susceptibility to smoking among teens of Chinese ethnic origin. The findings indicated that Chinese teens' understanding of the concept of susceptibility to smoking was in agreement with how it was originally conceptualized by Pierce and colleagues. In this study susceptible teens were perceived to be those without a firm commitment not to smoke and who might accommodate the possibility of smoking in the future. The operationalization of the concept among Chinese-Canadian teens was challenged by the participants, who suggested that some Chinese teens tend to avoid making absolute responses (e.g., "definitely not") to survey questions. This culture-related characteristic could negate the validity of the susceptibility to smoking. Cognitive interviewing is suggested to gain a better understanding of how Chinese-Canadian teens construct their answers to susceptibility questions. The focus group data also suggested adding an additional indicator to the measurement of susceptibility to smoking, namely, circumstances for possible smoking in the future. By asking teens to provide circumstances in which they might take up cigarettes, some teens could be identified as being susceptible, though they were deemed to be not susceptible by the original measure.

Strengths of the Study

Research population

This dissertation has two strengths in relation to the research population. First, this study is one of the few to target non-smoking adolescents. The smoking-related literature indicates that adolescent smokers have typically been the focus of research, and adolescent non-smokers, even though they are the target for smoking prevention, are often studied only indirectly as a reference

group for smokers. Without clearly understanding the experiences of these teens as non-smokers, and without knowing their strengths and challenges to remain as non-smokers, the design of effective prevention programs would be made more difficult (Flay, 1993). By focusing on non-smoking teens, this dissertation provides useful information about this population group.

Second, this study is specifically interested in adolescents with a Chinese ethnic background. As a growing ethnic group in Canada, Chinese teens constitute a large proportion of the Canadian youth population, particularly in metropolitan cities. Smoking-related information about this ethnic group could greatly influence the development of prevention programs in these areas. Again, this study is the first to report on the prevalence of susceptibility to smoking among Chinese-Canadian adolescents. It also examines factors that might predict smoking susceptibility, and explores cultural characteristics that might keep Chinese-Canadian teens tobacco free, or cause them to be susceptible to future smoking behaviours. The findings of this study can be used as a starting point for future research on susceptibility to smoking among Chinese ethnic teens.

Integration of quantitative and qualitative methods

Smoking among youths is a complex health-related behaviour, which includes multiple psychosocial facets and requires multifaceted answers. Using a single research method, qualitative or quantitative, can sometimes limit the contributions made by an investigation to understand the behaviour. This dissertation used a research design that combined quantitative and qualitative research methods, with the belief that different methods have different strengths, and that their combination would maximize the different strengths and produce results that

would be greater than those available in isolation (Brannen, 2005; Morgan, 1998). The study began with a quantitative analysis, where the patterns of susceptibility to smoking among Chinese-Canadian adolescents were identified but could not be explained. To complement the limitations of the quantitative results, the qualitative focus group method was applied to gain a better understanding of the phenomenon. The combining of quantitative and qualitative methods improved the overall ability of the research design to meet the primary goal of the study.

Understanding measurement issues from participants' perspectives

Although susceptibility to smoking is a relatively new concept, it has been widely used in many studies, including those where multiple ethnic groups were included. When researchers use this measure with adolescents from different ethnic groups, they usually assume that the measure can be used with all teens, and no evaluation of cultural appropriateness of the measure has been done. In this study, the operationalization of susceptibility to smoking among Chinese Canadian adolescents was explored qualitatively, from the adolescents' points of view. The findings highlight the importance of examining the cultural appropriateness of the measure of susceptibility to smoking among different ethnic groups. Information and suggestions from the Chinese adolescent participants about the issue of conceptualization and operationalization of the concept provide the beginning knowledge which needs to be extended by future studies.

Limitations of the Study

Secondary data

The quantitative section of this dissertation (Chapter II) used secondary data that were adopted from a province-wide, large-scale survey with randomly selected respondents. Despite

the strengths of secondary analysis, such as reduced cost, a less time-consuming research process, and access to larger populations (Steward & Kamins, 1993), the use of secondary data in this study has two limitations. First, while susceptibility to smoking is the central concept of this study, it was not the focus of the original research. The measurement of the concept of susceptibility to smoking does not perfectly conform to the original measure introduced by Pierce et al., since a key question was not included in the survey. Consequently, a similar question, believed to cover the same content, was used instead. Second, while the original survey sample included Chinese-Canadian adolescents as respondents, it was beyond the original survey's purpose to explore the effects of culture on susceptibility to smoking. Some indicators that were of interest of this study, such as parental attitudes toward adolescent smoking and teens' acculturation status, were not available in the original survey, which limited the quantitative secondary analysis in providing a more comprehensive explanation of adolescent susceptibility to smoking.

Heterogeneity of White/Caucasian and Chinese-Canadian groups

Chinese-Canadian adolescents were treated as a homogeneous group in this study; so was the White/Caucasian group, which was used as a reference group in the quantitative comparison analyses. Although one of the merits of the study is to specify the research focus on Chinese-Canadian teens rather than a more heterogeneous group of Asian teens, it has to be recognized that Chinese teens in Canada are not a homogeneous group. Their experiences of being a non-smoker and their risks for future smoking behaviours may vary by the extent of acculturation. Similarly, the routine use of the "White/Caucasian" category implies the

assumption that the people with this label constitute a homogeneous group. This assumption has been criticized because it may conceal the different ethnic beliefs and values held by the group members (Tutton, 2007). Both Chinese-Canadian and White/Caucasian groups are heterogeneous. A caution has to be made here for not drawing stereotypes for both of the two groups.

Generalizability

The question of generalizability of the findings applies to the quantitative section of the dissertation (Chapter II). The quantitative sample included adolescents who were in grade 10 and grade 11, who were randomly selected from 13 schools in two areas of BC. Consequently, findings of the quantitative analysis in this study cannot be generalized to adolescents who are in grades other than grade 10 or 11, since research suggests that the prevalence of susceptibility to smoking varies according to a teen's grade (Filice, Hannan, Lando & Joseph, 2003). In addition, the findings are limited to adolescents who are students of conventional secondary schools. Teens who attend other schools, such as ESL language schools for new immigrants, were not included in this study and these teens may differ with regard to peer influences and the smoking environment around them, which in turn may influence their susceptibility to smoking. Given that different provinces of Canada may have different youth smoking prevention programs, it may not be proper to generalize the findings of this study to other provinces or areas beyond British Columbia.

Information about the settings where the focus group participants were recruited

According to Lincoln and Guba (1985), transferability is one of the evaluation criteria for the rigor of a qualitative study. Transferability refers to the extent to which the findings from the data can be transferred to other settings or groups. For readers to make this judgement, qualitative research must be clearly described for the context in which the study is conducted. Although this dissertation (Chapter III) provides detailed information about the characteristics of the focus group participants, including their age, gender, places of birth, years of living in Canada, and language preferences for focus groups, the study is limited in its failure to collect information about the settings from where these participants were recruited – the schools. School environments are important factors influencing teens' smoking beliefs and behaviours (Hamilton, Cross, Lower, Resnicow, & Williams, 2003; Moore, Roberts, & Tudor-Smith, 2001). The lack of information about the schools, including school smoking policies and prevention programs, may limit the transferability of this study.

Sharing smoking related information at the focus groups

The focus group method is widely viewed as a useful data collection strategy. It allows participants in the group to comment, explain, disagree, and talk about their attitudes and experiences (Curtis & Redmond, 2007). In focus groups, certain types of socially acceptable opinion tend to emerge (Smithson, 2000), which may be seen as a limitation in this dissertation. Smoking by youths is viewed as an unacceptable behavior in Chinese culture (Hsia & Spruijt-Metz, 2003). With this social norm in mind, some Chinese adolescent participants might hesitate to openly share their smoking-related experiences, pro-smoking attitudes, and intentions

for future smoking in a focus groups. For example, in one focus group interview, participants were asked if they could think of any circumstances where they might take up cigarettes, and every one in the group gave the same answer – they couldn't think of any circumstances. Their response was different from participants of other groups where a variety of answers were provided. The data from this focus group was analyzed with caution since the group dynamics could obscure otherwise useful, and even controversial, views and perspectives.

Implications

Susceptibility to smoking is a measure that can be used to detect teens who are not smokers but who may be cognitively predisposed to smoking. Although its importance for smoking prevention is recognized, many of the issues around susceptibility to smoking in adolescents are under-investigated. This dissertation is the first study that targets Chinese-Canadian adolescents and explores factors that may influence the susceptibility to smoking among this ethnic group. Although it is beyond this study's aim to develop prevention programs that address susceptibility to smoking, the knowledge that is generated by this study has several implications for smoking prevention among youths.

Foremost, public health professionals need to recognize that Chinese-Canadian adolescents may not necessarily have a low risk of smoking. Although teens in this ethnic group are usually have a lower prevalence of smoking, compared to that of White/Caucasian teens, their rate of susceptibility to smoking may not be lower. Susceptible teens are at the early stage in the process of taking up cigarettes. It is both important to understand how Chinese-Canadian teens keep from taking up smoking and to understand what factors may facilitate their cognitive shift from having

a firm commitment to abstain from smoking to accommodating the possibility of future smoking.

The findings support the perspective that adolescent susceptibility to smoking should be considered in a broader cognitive, social and cultural context. Teens' attitudes toward smoking, peer influence, the collectivist culture, and the authoritarian parenting style are all related to being susceptible or not susceptible to smoking for Chinese-Canadian teens. Although susceptibility to smoking refers to a cognitive disposition to future smoking, it is not merely associated with cognitive factors. To gain a more complete picture of adolescent susceptibility to smoking, it has to be viewed by a comprehensive perspective.

This study highlights the importance of parenting style for the susceptibility of adolescents to smoking. An authoritarian parenting style is one of the three parenting styles that were described by Baumrind (1989). It is prevailing in Chinese ethnic groups. Based on adolescent perceptions, this parenting style appears to have both positive and negative effects on Chinese-Canadian teens' susceptibility to smoking. It is reasonable to expect that the research focusing on the relationship between parenting styles and susceptibility to smoking may provide useful knowledge for youth smoking prevention. Although there has been some work on parenting styles and youth health behaviours, the relationship between the susceptibility to smoking and parenting styles is far from clear and therefore needs future investigation.

Taken with current knowledge about the susceptibility to smoking, the findings of this study can provide direction for future inquiries into the susceptibility to smoking among adolescents. As noted earlier, Chinese-Canadian adolescents have the same rate of susceptibility to smoking as do White/Caucasians, even though their smoking rate is lower. A possible explanation, which

is supported by the focus group data, is that a collectivist culture and an authoritarian parenting style help to protect Chinese-Canadian teens from smoking initiation during adolescence. A significant proportion of these teens, however, are susceptible to smoking in the future. Hypothetically, once these teens become independent from their parents and their families, they are at risk for smoking experimentation. To examine this hypothesis, a longitudinal research study is needed to follow the susceptible teens as they enter young adulthood.

Chinese teens in Canada are influenced by both the mainstream culture and the culture of their origin. The way in which the two cultures interact and influence the Chinese-Canadian teens' susceptibility to smoking is unclear. Also, little is known about how changes in social context may contribute to the teens' cognitive shift in favour of smoking. These knowledge gaps may be addressed by research that includes adolescents with different immigration histories and different degrees of acculturation. Researchers may also consider comparative research designs Chinese teens in Canada and teens in China to evaluate the effects of smoking-related social environments on the susceptibility to smoking among youths.

This study emphasizes the importance of examining the conceptualization and operationalization of the measure of susceptibility to smoking when it is to be used in different ethnic groups. It is not proper to assume that adolescents from different ethno-cultural backgrounds will interpret the concept and respond to the measurement items in the same way. This study provides a starting point for research on cultural equivalence of the measure of susceptibility to smoking. While possible directions for strengthening the validity of the measure are suggested, these directions must be subjected to a thorough psychometric assessment.

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APPENDIX 1

RECRUITMENT POSTER

Are You a Grade 10 or 11 Student with Chinese Ethnic Background?

If so, we would like to invite you to participate in our research study aimed at

Understanding Cultural Factors

that Keep Canadian-Chinese Adolescents from Smoking

Principal investigator: Dr. Joy Johnson, School of Nursing, UBC, phone xxx-xxx-xxxx

Co-investigators: Ms. Weihong Chen, School of Nursing, UBC, phone xxx-xxx-xxxx

Dr. Joan Bottorff, Faculty of Health & Social Development, UBC Okanagan, phone

xxx-xxx-xxxx

We are a group of researchers from the University of British Columbia School of Nursing.

We are interested in hearing Canadian-Chinese adolescents' views about the things that may play a role in smoking prevention.

If you are

- **a grade 10 or 11 student,**
- **live in the City of Vancouver area,**
- **have Chinese ethno-cultural background, and**
- **have never smoked or have smoked but not in the past 30 days and not more than 25 cigarettes in your whole life,**

you are eligible and are invited to participate in a small group discussion with other teens like

you. We will give you a \$15 gift certificate as appreciation for your time.

If you would like to know more about the research study or would like to participate, please phone *Ms. Weihong Chen* – UBC School of Nursing at *xxx-xxx-xxxx*.

Thank you!

APPENDIX 2
LETTER OF INVITATION

Date

Hello!

We are a group of researchers from the University of British Columbia School of Nursing.

We are conducting a study aimed at **understanding cultural factors that keep**

Canadian-Chinese adolescents from smoking. We are interested in hearing Canadian-Chinese

adolescents' views about how cultural factors may play a role in smoking prevention, with

particular interests in whether and how these factors may have influences on protecting

Canadian-Chinese adolescents from smoking or putting them in the risk of smoking in the future.

The views that the teens will be sharing with us will help in developing smoking prevention

strategies, particularly for Canadian-Chinese adolescents.

We are inviting teens who

- **live in the City of Vancouver,**
- **are grade 10 or 11 students,**
- **have Chinese ethno-cultural background, and**
- **have never smoked or have smoked but not in the past 30 days and not more than 25 cigarettes in their whole life**

to participate in the study. We will conduct group discussions, each of which will include 5-7 teens, last 60-90 minutes, and be held in a community setting familiar to and accessible to the participants.

Participation in this study is voluntary and you may choose to withdraw from the study at any time. When finishing the small group discussion, we will give you a \$15 gift certificate as appreciation for your time. The information you provide is confidential and will not be accessible by any one else except the researchers of this study.

If you are interested in participating or would like to know more about the study, please phone *Ms. Weihong Chen* – UBC School of Nursing at *xxx-xxx-xxxx*.

Thank you!

APPENDIX 3

TEEN ASSENT FORM FOR PARTICIPATION

Research Project:

Experiences of Being a Non-Smoker among Chinese-Canadian Adolescents

Research Team:

Principal investigator: Dr. Joy Johnson, School of Nursing, UBC, phone xxx-xxx-xxxx

Co-investigators: Ms. Weihong Chen, School of Nursing, UBC, phone xxx-xxx-xxxx

Dr. Joan Bottorff, Faculty of Health & Social Development, UBC

Okanagan, phone xxx-xxx-xxxx

Purpose of the Study

Researchers at the University of British Columbia School of Nursing are conducting a study aimed at understanding cultural factors that keep Canadian-Chinese adolescents from smoking.

This research is being conducted as part of Ms. Weihong Chen's doctoral thesis research. She is interested in interviewing grade 10 or 11 adolescents who have Chinese ethnic background and have never smoked or have smoked but not in the past 30 days and not more than 25 cigarettes in their whole lives. This research study is funded by Canadian Tobacco Control Research Initiative.

You have been invited to take part in this study.

Study Procedures

Your participation in this study will involve taking part in a 60-90 minute small group discussion

(focus group) with 4-6 other teenagers. You will be asked about your experiences of being a non-smoker and to share your views about the things that may play a role in Canadian-Chinese adolescents' decision to abstain from smoking. We will tape record the interview so that we will have an accurate record of the comments. You will be given a \$15 gift certificate in appreciation of your time and participating in this study, even if you do not complete the focus group.

Risks and Benefits

The information collected in the focus groups will help us identify the influences of culture on the prevention of adolescent tobacco use, which in turn will be used in developing smoking prevention programs, particularly for Canadian-Chinese adolescents. You may not personally receive any direct benefits from taking part in this study, but no risks are expected from participating.

Confidentiality

We will ask all participants to keep the information discussed confidential. We do expect that you would honor our request, but we cannot control what you will ultimately do with the information. Please do know that information collected in this study is strictly confidential. Your name will not be used in the study or in any reports written about the study. Instead, a code number will be used to identify your responses. The information will be stored in a locked file cabinet and computer files will be password protected. Except the researchers on this research team, no one else will have access to the information.

For More Information

If you have any questions you may contact the principal investigator Dr. Joy Johnson at

604-822-7435. If you need to talk to a research team member who can speak Chinese, please call Ms. Weihong Chen at xxx-xxx-xxxx. If you have any concerns about your rights as a research participant, you may contact the Research Subject Line at the University of British Columbia, Office of Research Services at 604-822-8598.

Consent

Taking part in this study is voluntary. You may refuse to take part or withdraw at any time. By signing this consent form, you indicate that you understand the nature of participation in the study, agree to take part in the study, and have received a copy of this assent form for your record.

Teen's Name _____ Signature:

Date: _____

APPENDIX 4

PARENTAL CONSENT FOR TEEN PARTICIPATION

Research Project:

Experiences of Being a Non-Smoker among Chinese-Canadian Adolescents

Research Team:

Principal investigator: Dr. Joy Johnson, School of Nursing, UBC, phone xxx-xxx-xxxx

Co-investigators: Ms. Weihong Chen, School of Nursing, UBC, phone xx-xxx-xxxx

Dr. Joan Bottorff, Faculty of Health and Social Development, UBC

Okanagan, phone xxx-xxx-xxxx

Purpose of the Study

Researchers at the University of British Columbia School of Nursing are conducting a study aimed at understanding cultural factors that keep Canadian-Chinese adolescents from smoking.

This research is being conducted as part of Ms. Weihong Chen's doctoral thesis research. She is interested in interviewing grade 10 or 11 adolescents who have Chinese ethnic background and have never smoked or have smoked but not in the past 30 days and not more than 25 cigarettes in their whole lives. This research study is funded by Canadian Tobacco Control Research Initiative.

Your son/daughter has been invited to take part in this study.

Study Procedures

Your son/daughter's participation in this study will involve taking part in a 60-90 minute small

group discussion (focus group) with 4-6 other teenagers. They will be asked about their experiences of being a non-smoker and to share their views about the things that may play a role in Canadian-Chinese adolescents' decision to abstain from smoking. We will tape record the interview so that we will have an accurate record of the comments. All participants, including those who do not complete the focus group, will be given a \$15 gift certificate in appreciation of their time and participating in this study.

Risks and Benefits

The information collected in the focus groups will help us identify the influences of culture on the prevention of adolescent tobacco use, which in turn will be used in developing smoking prevention programs, particularly for Canadian-Chinese adolescents. Your son/daughter may not personally receive any direct benefits from taking part in this study, but no risks are expected from participating.

Confidentiality

We will ask all participants to keep the information discussed confidential. However, we cannot control what they will ultimately do with the information, and therefore the confidentiality may not be guaranteed in focus groups. Please do know that information collected in this study is strictly confidential. Your son/daughter's name will not be used in the study or in any reports written about the study. Instead, a code number will be used to identify their responses. The information will be stored in a locked file cabinet and computer files will be password protected. Except the researchers on this research team, no one else will have access to the information.

For More Information

If you have any questions you may contact the principal investigator Dr. Joy Johnson at xxx-xxx-xxxx. If you need to talk to a research team member who can speak Chinese, please call Ms. Weihong Chen at xxx-xxx-xxxx. If you have any concerns about your rights as a research participant, you may contact the Research Subject Line at the University of British Columbia, Office of Research Services at 604-822-8598.

Consent

Taking part in this study is voluntary. Your son/daughter may refuse to take part or withdraw at any time. By signing this consent form, you indicate that you understand the nature of participation in the study, agree to let your son/daughter take part in the study, and have received a copy of this consent form for your record.

Parent's Signature: _____ Date: _____

APPENDIX 5

CERTIFICATE OF ETHICS APPROVAL



The University of British Columbia

Office of Research Services

Behavioural Research Ethics Board

Suite 102, 6190 Agronomy Road, Vancouver, B.C. V6T 1Z3

CERTIFICATE OF APPROVAL- MINIMAL RISK RENEWAL

PRINCIPAL INVESTIGATOR: Joy L. Johnson	DEPARTMENT: UBC/Applied Science/Nursing	UBC BREB NUMBER: H05-81137
INSTITUTION(S) WHERE RESEARCH WILL BE CARRIED OUT:		
Institution	Site	
UBC	Point Grey Site	
Other locations where the research will be conducted: N/A		
CO-INVESTIGATOR(S):		
Weihong Chen Joan L. Bottorff		
SPONSORING AGENCIES:		
Canadian Tobacco Control Research Initiative		
PROJECT TITLE:		
Predicting Susceptibility to Smoking: A Multivariate Study in a Bi-ethnic Sample of Adolescent Non Smokers		

EXPIRY DATE OF THIS APPROVAL: April 16, 2008

APPROVAL DATE: April 16, 2007

The Annual Renewal for Study have been reviewed and the procedures were found to be acceptable on ethical grounds for research involving human subjects.

***Approval is issued on behalf of the Behavioural Research Ethics Board
and signed electronically by one of the following:***

Dr. Peter Suedfeld, Chair

Dr. Jim Rupert, Associate Chair

Dr. Arminee Kazanjian, Associate Chair

Dr. M. Judith Lynam, Associate Chair

Dr. Laurie Ford, Associate Chair



The University of British Columbia
 Office of Research Services
Behavioural Research Ethics Board
 Suite 102, 6190 Agronomy Road, Vancouver, B.C. V6T 1Z3

CERTIFICATE OF APPROVAL- FULL BOARD

PRINCIPAL INVESTIGATOR: Joy L. Johnson	DEPARTMENT: UBC/Applied Science/Nursing	UBC BREB NUMBER: H07-00279
INSTITUTION(S) WHERE RESEARCH WILL BE CARRIED OUT:		
Institution	Site	
UBC	Point Grey Site	
Other locations where the research will be conducted:		
Community centres		
CO-INVESTIGATOR(S):		
Weihong Chen Joan L. Bottorff		
SPONSORING AGENCIES:		
Canadian Tobacco Control Research Initiative		
PROJECT TITLE:		
Experiences of being a non smoker among Chinese Canadian adolescents		
REB MEETING DATE:	CERTIFICATE EXPIRY DATE:	
March 8, 2007	March 8, 2008	
DOCUMENTS INCLUDED IN THIS APPROVAL:		DATE APPROVED:
		March 28, 2007
Protocol:		
Research Proposal	February 12, 2007	
Consent Forms:		
Parental Consent Form	March 27, 2007	
Assent Forms:		
Teen Assent Form	March 27, 2007	
Advertisements:		
Recruitment Poster	March 20, 2007	
Questionnaire, Questionnaire Cover Letter, Tests:		
Focus Group Questions	February 12, 2007	
Letter of Initial Contact:		
Invitation Letter	February 12, 2007	

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The Annual Renewal for Study have been reviewed and the procedures were found to be acceptable on ethical grounds for research involving human subjects.

**Approval is issued on behalf of the Behavioural Research Ethics Board
and signed electronically by one of the following:**

Dr. Peter Suedfeld, Chair

Dr. Jim Rupert, Associate Chair

Dr. Arminee Kazanjian, Associate Chair

Dr. M. Judith Lynam, Associate Chair

Dr. Laurie Ford, Associate Chair

APPENDIX 6
DEMOGRAPHIC FORM

1. Your age _____ Grade _____

2. Where were you born?

- Canada
- China
- Hong Kong
- Taiwan
- Other, please specify _____
- I don't know

3. If you were not born in Canada, when did you immigrate to Canada?

- When I was _____ years old.
- I was born in Canada
- I don't know

4. This question is about your parents' country of birth:

Your mom was born in

- Canada
- China
- Hong Kong
- Taiwan

Your dad was born in

- Canada
- China
- Hong Kong
- Taiwan

- Other, please specify _____ Other, please specify _____
- I don't know I don't know

5. Which parent or parents do you currently live with most of the time? (Check all that apply)

- Mother
- Father
- Step-mother
- Step-father
- Foster parent(s)
- Grandparent(s)
- Guardian(s)
- Other, please specify _____

6. What language do you speak most often at the home you are living in?

- Chinese
- English
- Chinese equal to English
- Other, please specify _____

7. What language do you speak on a regular basis? Check all that apply.

- English
- Chinese
- Other, please specify _____

8. This question is about the smoking environment around you. Do any of the following people

in your life smoke cigarettes?

	Yes	No, they never smoked	No, they quit	I don't know	Do not apply
Mother	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Father	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Step-parent(s)/foster parent(s)/guardian(s)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Grandparent (s)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Brother	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Sister	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Cousin	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Boyfriend/girlfriend	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Best friend	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Others	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

9. Have you ever tried cigarette smoking even one or two puffs?

Yes

No

10. How old were you when you took your first puff of a cigarette?

When I was _____years old.

I have never taken a puff of a cigarette.

11. About how many cigarettes have you smoked in your entire life?

It's about _____cigarettes.

I have never smoked.

12. At any time during the next year, do you think you will smoke a cigarette?

Definitely yes

Probably yes

Probably not

Definitely not

13. If one of your best friends were to offer you a cigarette, would you smoke it?

Definitely yes

Probably yes

Probably not

Definitely not

APPENDIX 7

FOCUS GROUP INTERVIEW SCHEDULE

Step 1: Collecting parental consent/teen assent; double checking whether each form has been signed by the participant and his/her parent. Hand out name tags

Step 2: Distributing a copy of demographic form to each participant, and collecting the forms when they have been finished. The focus group assistant will check whether each form has been completely filled out.

Step 3: Introducing the purpose of the study and the ground rules of focus group interview.

Hello, my name is Weihong Chen, and this is ...(the name of the focus group assistant) who will be helping me today. We are part of a research team at the University of British Columbia that will be conducting this study to hear from you about how cultural factors may play a role in smoking prevention among Chinese-Canadian teens who are non-smokers.

In the project we are using the term “non-smokers” We are using this term to not only refer to the teens who have never smoked, but also those who might have smoked but not in the past 30 days and not more than 25 cigarettes. During our first contact by phone, I had asked you the question about your previous smoking experience, and known that all of you meet our criteria of non-smoker. So we are delighted that you are here today to share your comments with us.

In order for us to remember and learn from your comments today, we will be recording your comments. Please be assured that we will treat our conversation and the recording as private and confidential. Today’s conversation will take about one hour. We won’t be taking a break during

the conversation, but if you need to use the bathroom, it is... (the location of the bathroom).

Before we get started, there are some important points I would like to go over:

1. All answers to our questions are important. There are no right or wrong answers. We actually expect people to have different ideas about the topics we will discuss today. Please feel free to share your view even if it differs from what others may have said. Please respect the opinions of others.
2. During the conversation, we ask that only one person should speak at a time. We will be recording the conversation because we don't want to miss any of your valuable comments, so please speak up.
3. The conversation will be kept confidential. Only the research team members will have the access to the data we collect in the focus groups. Your name will not be attached to your comments in any reports or articles written about the study. Instead, a number code will be given to each person in the focus groups.
4. As a participant, we ask that you keep private the remarks of the people in this group. We encourage all of you not to talk with others outside this room about what is discussed in the focus group.

We hope you will enjoy the questions and discussion today. Do you have any questions?

Okay, then let's begin.

Step 4: Focus group interview.

Activities and interests of teens

(1) Let's begin with everyone introducing themselves and telling us about one thing they like to do in their spare time. (This is a warm-up question. Be sure that everyone in the group answers this question)

Experience of being a non-smoker

(2) We are interested in learning more about what it is like in your school and in your family to be a non-smoker. What is it like when you or teens like yourself are with other teens and someone smokes?

Probes:

- Has anyone had a different experience they would like to share?
- At what times or in what situations have you found it difficult not to smoke, or where you felt the pressure of smoking from others?
- Tell me all the reasons that keep you and other teens like yourself from smoking.

Does anyone else have ideas that have not been shared yet?

- If you are around family members or relatives who smoke, what is it like being with them when you do not smoke?

Attitudes toward smoking

(3) Do you know anyone in your life who smokes, such as your classmates, friends, or family members? What do you think are the reasons for them to take up smoking cigarettes? (If participants say that people smoke because they are addicted to tobacco, we need to ask them what they think are the reasons why people smoke in the first place?)

(4) Do you think there is any difference between a teen smoker and an adult smoker beyond the age difference? Could you say more?

Puff Experience

(5) We know from a youth survey conducted by UBC that many teenagers had puff experience, and some of them had even smoked a couple of cigarettes. But then they stopped and did not go further to become a smoker. For other youth, these smoking experiences lead to regular smoking. Based on your observations and experiences, how would you explain this? In particular, we are interested in your opinions about what keeps some teens from NOT becoming regular smokers, even if they have experimented with a puff or a couple of cigarettes.

Culture factors

As you know, the research study we are doing is focusing on the teens with Chinese cultural background. For the following questions, I would like to ask you to think about your Chinese cultural background, and help us to understand how this cultural background may play a role in smoking prevention.

(6) How different is it between teens with Chinese cultural background and those with other ethnic backgrounds in terms of smoking and non-smoking?

Probes:

- What things do you think may keep or prevent Chinese-Canadian teens from taking up smoking? Does anyone have a different idea?

- Any things that you think may put Chinese-Canadian youth at risk of taking up cigarettes?

Do you think Chinese parents' attitudes toward smoking play a role here?

Susceptibility to smoking

(Distributing the hand-out) A couple of years ago, UBC conducted a youth survey on smoking and health. The researchers asked the teen participants a couple of questions to measure if they were susceptible to future smoking. For example, they asked teens "Do you think you're going to smoke in the next five years?" If they said "definitely not", then they were not susceptible. If they gave any other answers, like "Well, probably", or "I don't know", or even "Probably not", they were categorized as susceptible.

Then we analyzed their responses, and found that one of the findings really surprised us. As you may already know, we found the smoking rate to be much lower among Chinese teens than among white teens in Canada. We assumed that the proportion of Chinese-Canadian teens who are susceptible to smoking should also be lower. However, what has surprised us is that Chinese-Canadian teens at your age have the same rate of susceptibility to smoking as white teens. The rate is nearly 30%. We think the finding is very interesting, but we don't really know how to explain it.

(7) Now I want to ask you to help me understand the finding. Why do you think it is that most of the Chinese teens don't smoke, but 30% of them say they intend to smoke in the future?

Probes if necessary: If non-smoking Chinese teens and white teens have similar

expectations about smoking in the future, why might explain why less Chinese teens end up smoking? Why wouldn't we see the same smoking rates in the two groups if their expectations about smoking are similar?

Another interesting finding is that we found girls are more susceptible to smoking than boys. This is not only true for white group, but also true for Chinese group. This finding is different from what people have found for girls in China, where girls are less susceptible than boys. Even though they are all Chinese girls, the girls living in Canada seem very different from the girls living in China in terms of the susceptibility to smoking.

(8) What do you think may cause this difference?

Probes:

- Social norms? Peer influence? The change of parental influence? Teacher's role?)

(9) Can you imagine any circumstances where teens your age might be tempted to smoke?

Tell me about that.

Probes:

If one of your best friends were to offer you a cigarette, would you smoke it? Could you say more about it? That concludes all of my questions today. I want to thank you very much for your sharing your experiences and ideas with us today. Before we end this session, I would like to give you a few minutes to write down any additional thoughts you have about the discussion we have had today. Things you could write down are your ideas about the most important ideas that were discussed today, and any additional ideas that you didn't get a chance to share with us in the group. I am going to give you about 5 minutes to jot down these ideas.

Gather up papers – thank participants.

APPENDIX 8

THE HAND-OUT USED IN THE FOCUS GROUP INTERVIEWS

Figure 1: Smoking rates among White and Chinese teens

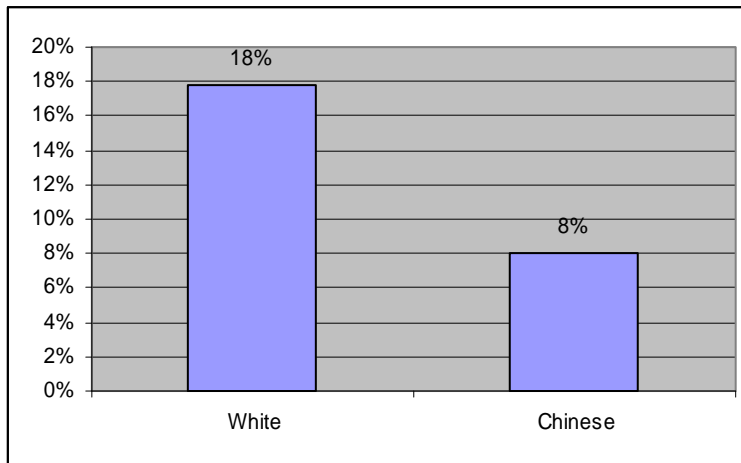
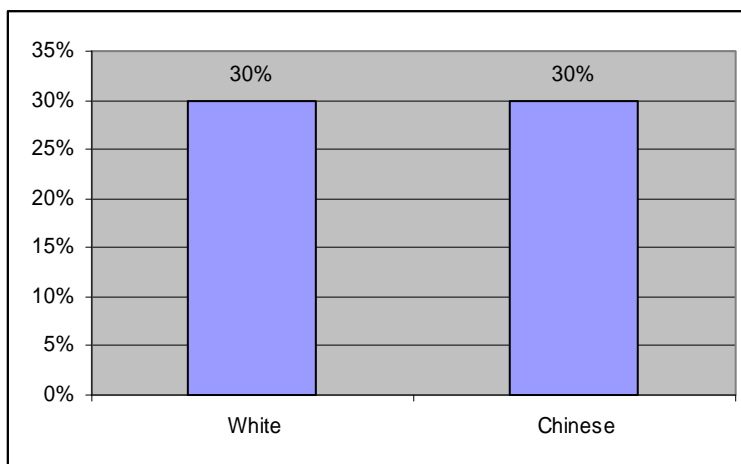


Figure 2: Rates of susceptibility to future smoking among White and Chinese teens



APPENDIX 9

FOCUS GROUP PARTICIPANTS' AGE, GENDER AND SUSCEPTIBILITY CLASSIFICATION

	Gender	Age	Intend to smoke in next year	Smoke the cigarettes offered by friends	Susceptible	Circumstances of future smoking
1	Boy	17	Definitely Yes	Probably Yes	Yes	Yes
2	Boy	17	Probably Not	Probably Not	Yes	Yes
3	Boy	18	Definitely Not	Definitely Not	No	No
4	Boy	17	Definitely Not	Definitely Not	No	No
5	Boy	17	Definitely Not	Definitely Not	No	No
6	Boy	16	Definitely Not	Definitely Not	No	No
7	Girl	16	Definitely Not	Definitely Not	No	No
8	Girl	16	Probably Not	Definitely Not	Yes	Yes
9	Girl	16	Definitely Not	Definitely Not	No	Yes
10	Girl	17	Probably Yes	Probably Yes	Yes	Yes
11	Boy	16	Definitely Not	Definitely Not	No	No
12	Boy	16	Definitely Not	Definitely Not	No	No

	Gender	Age	Intend to smoke in next year	Smoke the cigarettes offered by friends	Susceptible	Circumstances of future smoking
13	Boy	16	Definitely Not	Definitely Not	No	No
14	Boy	16	Definitely Not	Definitely Not	No	Yes
15	Boy	16	Definitely Not	Definitely Not	No	No
16	Boy	17	Probably Yes	Probably Yes	Yes	Yes
17	Boy	16	Definitely Not	Probably Not	Yes	No
18	Girl	16	Definitely Not	Definitely Not	No	No
19	Girl	16	Definitely Not	Definitely Not	No	No
20	Girl	17	Definitely Not	Definitely Not	No	No
21	Girl	17	Definitely Not	Definitely Not	No	No
22	Girl	16	Definitely Not	Definitely Not	No	No
23	Girl	17	Definitely Not	Probably Not	Yes	No
24	Girl	16	Definitely Not	Definitely Not	No	No