

**FACTORS ASSOCIATED WITH SEXUAL INITIATION AMONG EAST ASIAN  
ADOLESCENTS IN CANADA**

by

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## Abstract

Despite the large number of adolescents of East Asian origin in Canada, there is limited research on sexual health among this population. The primary objective of this study was to investigate factors associated with sexual initiation among East Asian adolescents in British Columbia. This dissertation consists of four studies, all of which used the British Columbia Adolescent Health Survey of 2008, including over 4,000 East Asian students in grades 7 through 12.

The first study documented estimated prevalence of sexual health and risk behaviors. Nearly 10% of East Asian students had ever had sexual intercourse. Of those sexually active students, about 70% had engaged in risky sexual behaviors. Born in Canada and speaking English at home were associated with greater odds of being sexually active.

The second study indicated that the Multigroup Ethnic Identity Measure-Revised (MEIM-R) measured two highly correlated dimensions of ethnic identity (*Exploration* and *Commitment*). The MEIM-R was invariant across age groups and degree of exposure to Canadian or East Asian cultures. Using the MEIM-R, the third study examined the association between ethnic identity and sexual initiation. Students with stronger ethnic identity were less likely to have had sexual intercourse.

Finally, the fourth study was conducted to identify risk and protective factors associated with sexual initiation, and to examine the likelihood of sexual initiation, given a specific set of risk and protective factors. School connectedness was a strong protective factor for boys; family connectedness, ethnic identity, and school connectedness were the top three protective factors for girls. The top three risk factors were lifetime alcohol use, sexual abuse histories, and emotional distress for boys; and lifetime alcohol use, sexual abuse histories, and looking older compared to peers of about the same age for girls. The presence of those protective factors

substantially decreased the likelihood of sexual initiation for adolescents exposed to risk. For those with the three risk factors, the probability of sexual initiation was reduced by half with the addition of the top protective factor(s). The study findings suggest that a dual approach of reducing risk and fostering protection would promote sexual health among East Asian adolescents.

## **Preface**

This study was approved by the Behavioural Research Ethics Board of the University of British Columbia (certificate # H09-01076).

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## **Chapter 1. Introduction**

### **Background**

Canada is one of the world's major receiving countries for immigrants. One in five residents were born outside of Canada; the foreign-born population increased by 14% between 2001 and 2006 as compared to 3% for the Canadian-born population (Chui, Tran, & Maheux, 2007). The growth in the immigrant population was accompanied by an increase in the visible minority population; its growth rate was five times faster than that of the total population (Statistics Canada, 2008a). British Columbia (BC) has the highest proportion of visible minority groups among all ten provinces (Statistics Canada, 2008a), with East Asians (Chinese, Korean, and Japanese), the largest minority group, representing 12% of the provincial population (Statistics Canada, 2008b).

Although East Asians comprise a significant proportion of the population, little is known about their health and risk behaviors. Asians in North America are often seen as “model minorities” because of their educational and economic achievements (Uba, 1994; Varney, 2001). However, not all Asians are problem-free. In BC, East and Southeast Asians comprised 8% of all new positive cases of human immunodeficiency virus (HIV) in 2009 (Gilbert et al., n.d.). The group remains underrepresented in this population. Nevertheless, of particular concern is the high increase (124%) in this proportion between 2003 and 2009, which is likely to be higher than the growth in the overall East and Southeast Asian population during the same time period. Furthermore, a high proportion of individuals with diagnoses of acquired immunodeficiency syndrome (AIDS) within one year of their first HIV-positive test was observed among Asians in Canada and the United States (US), indicating that those Asians may have suffered from delayed access to HIV testing or effective treatment (Hall et al., 2009). Among young adult women in the US who had ever had sexual intercourse, Asian and Pacific Islander women had the lowest

rate of HIV testing (Hahm, Song, Ozonoff, & Sassani, 2009). Sexual health promotion and risk reduction for Asians need to be made a public health priority. In particular, adolescence is an important target age, during which sexual development and exploration occur. Also, sexually transmitted infections (STIs) such as chlamydia and gonorrhea disproportionately affect adolescents and young adults (Gilbert et al., n.d.). Interventions for this group would have a positive impact on the overall health of the general population.

To understand sexual activity among ethnic minority youth, ethnocultural influences should not be ignored. Research has shown ethnic differences in sexual behavior (e.g., Lowry, Eaton, Brener, & Kann, 2011; Spence & Brewster, 2010). As well, the prevalence of sexual activity within the same ethnic group differs depending on acculturation-related factors such as nativity (native-born or foreign-born), length of residence in the host country, generational status, and primary language spoken at home (e.g., Cochran, Mays, & Leung, 1991; Hahm, Lahiff, & Barreto, 2006; Kuo & St Lawrence, 2006; Schuster, Bell, Nakajima, & Kanouse, 1998). Therefore, the current study investigated a relationship between cultural factors and sexual activity among East Asian adolescents. While ethnoculture may be an important factor, from an ecological perspective it is only one of many factors in the lives of adolescents that can influence their health (Bronfenbrenner, 1979). This study also investigated personal and other contextual factors associated with sexual behavior.

### **Purpose of the Study**

The overall objectives of the study were: a) to document the prevalence of sexual activity, and b) to examine factors associated with increased or decreased likelihood of sexual initiation (i.e., risk and protective factors) among East Asian adolescents living in BC. Unlike past research which included adolescents whose ancestors came from various regions of Asia (i.e., East, Southeast, South, and West Asia) or combined Asians with Pacific Islanders, this

study focused on East Asian adolescents, namely those of Chinese, Korean, or Japanese descent. While each of these countries has its own unique language and cultural beliefs and practices, they share common cultural, religious, and philosophical backgrounds (Jang, 2002). Confucianism, Buddhism, and Taoism have shaped East Asians' way of life, including self-understanding and human relationships (Yoon & Cheng, 2005). People of East Asian heritage also have similar immigration histories (Jang, 2002). Findings from research focusing on a group of adolescents who share similar cultural patterns would provide guidance to health professionals who design and implement sexual health strategies that are culturally appropriate for this group.

To address the above objectives, I conducted four research projects with the following aims:

1. To document the prevalence of sexual behavior and reasons for abstaining from sexual intercourse
2. To evaluate the psychometric properties of scores on the 6-item Multigroup Ethnic Identity Measure - Revised
3. To examine measurement invariance across age groups and groups with differing degrees of cultural exposure
4. To examine the relationship between ethnic identity and psychological well-being.
5. To investigate the relationship between ethnic identity and sexual initiation
6. To identify risk and protective factors associated with sexual initiation
7. To examine the likelihood of sexual initiation, given a specific set of risk and protective factors

### **Significance of the Study**

This was the first study to examine risk and protective factors associated with sexual

initiation among East Asian adolescents in Canada. Most research in this area has been conducted in the US. Although Canada and the US are geographically close and both have multi-ethnic populations, overall social, cultural, and political contexts and values are not necessarily the same (Shoveller, Johnson, Langille, & Mitchell, 2004). Because of these differences in social and physical environments, results from US studies may not be applicable to Asian youth in Canada. Furthermore, as pointed out by Amaro and colleagues (Amaro, Navarro, Conron, & Raj, 2002), within-ethnic group differences have not been sufficiently explored. In addition, this study was a secondary analysis of data from the 2008 British Columbia Adolescent Health Survey (BC AHS). The survey employed a stratified, cluster sampling and sample weights to generate a provincially representative sample of students in grades 7 through 12. The BC AHS data provided reliable estimates of population parameters. For these reasons, the study findings could contribute to a better understanding of sexual activity among East Asian adolescents in BC. This important information may help nurses and other healthcare providers to develop and deliver interventions aimed at sexual health promotion for this population.

### **Outline of the Dissertation**

This doctoral dissertation consists of seven chapters including four research projects. Chapter 1 provides an introduction to the research topic and a literature review. Chapter 2 presents the specific aims of the study, a conceptual model for this study, and a brief summary of the BC AHS. Chapter 3 provides basic information on sexual health among East Asian teens by describing the prevalence of sexual activity and sexual health outcomes (Aim1). Chapter 4 assesses the reliability and validity of the 6-item Multigroup Ethnic Identity Measure - Revised (Aim 2 – 4). Using the ethnic identity scale, Chapter 5 addresses Aim 5, exploring the role of ethnic identity in sexual initiation. Chapter 6 uses multivariate analyses to identify what risk and



protective factors, including ethnic identity, are associated with sexual initiation (Aim 6). Chapter 6 also estimates probability of sexual initiation, given a specific set of risk and protective factors (Aim 7). Finally, Chapter 7 summarizes the results of the four projects, discusses some limitations and contributions of the study, and provides recommendations for future research and practice.

## **Theoretical Framework**

### **Ecological Models**

#### **Ecological systems theory**

Adolescence is a period during which rapid and profound changes occur. The changes take place at various aspects of adolescents' lives – from physical growth to behavioral changes and psychosocial development. In addition, as adolescents grow, their social world expands, with increasing opportunities to interact with new people and engage in a variety of activities. To understand health behaviors and promote health among adolescents who experience changes at different levels, ranging from individual to social, an ecological approach is appropriate. This is because of its emphasis on the joint influence of the individual and environment on well-being.

Urie Bronfenbrenner's Ecological Systems Theory (Bronfenbrenner, 1979) is among the most influential explanations of adolescent development and behavior. A distinguishing feature of this theory is an emphasis on environment as a critical factor in healthy development. A focus of Bronfenbrenner's ecological model is more on the environment as it is *perceived* than on the physical or objective environment that has been traditionally investigated in biology or epidemiology. Furthermore, environment is not limited to immediate settings, and is conceptualized as encompassing multi-level systems including micro-, meso-, exo-, and macro-systems. The *microsystem* refers to the complex of interrelations within the immediate

setting and comprises elements such as activities, roles, and interpersonal relations experienced by the individual in a given setting. The *mesosystem* is “a system of microsystems” (p. 25), the interrelations among multiple settings in which the individual actively participates (e.g., relationships among family, school, and neighborhood). The *exosystem* is not the immediate settings in which the individual is directly involved; however, events that occur in this system can affect or be affected by the individual (e.g., parents’ social networks, the activities of a local school board). The *macrosystem* is the most remote and largest system in which micro-, meso-, and exo-systems are nested. Examples include ideology, racism, oppression, cultural values, and social systems. Influences of the macrosystem on the individual are mediated through the three smaller systems. The interrelations among systems, that is, reciprocal relations among the individual, immediate settings, and the larger society and culture, are assumed to influence human development.

The ecological perspective has been used to guide health research and practice, with the assumption that health is shaped by a dynamic interplay between person and environment (Green, Richard, & Potvin, 1996; Grzywacz & Fuqua, 2000; McLeroy, Bibeau, Steckler, & Glanz, 1988; Stokols, 1992). Although the ecological perspective emphasizes the important role that environmental factors play in health promotion, personal attributes such as genetic heritage, psychological disposition, and behavioral patterns should not be neglected (Stokols, 1992). The same environmental conditions do not necessarily influence all individuals’ health in the same way; much depends on individual-level factors such as personality, health practices, and available resources (Stokols, 1992). The joint, equal focus on both person and environment is a key concept in ecological theories (Grzywacz & Fuqua, 2000).

Disaggregating person and environment into nested, transactional systems has turned healthcare providers and educators’ attention to more specific aspects of environment, and can

benefit them (Grzywacz & Fuqua, 2000). Ecological analysis helps to identify targets of health interventions by untangling complex interrelations among environmental systems and between person and environment. Important to note is that in the ecological approach, the targets are not only individuals but also physical and social environments. Because health is viewed as an outcome of the quality of the fit between person and environment, interventions that bring about changes at multiple levels of people's lives, rather than only at the individual-level, are the most effective (Grzywacz & Fuqua, 2000). Another benefit is the explicit attention paid to larger systems, such as exosystems and macrosystems in Bronfenbrenner's theory, which is useful in developing culturally appropriate intervention programs (Grzywacz & Fuqua, 2000). Thus, the ecological approach is particularly useful to health research and practice for ethnic minorities. Moreover, recognition of the societal or cultural-level influence on health prevents blame being placed on individuals who fail to engage in health-promoting behavior due to a lack of environmental support.

### **Risk and protection**

Based on Bronfenbrenner's ecological theory (Bronfenbrenner, 1979) and Jessor's conceptual framework for adolescent risk behavior (Jessor, 1991), Blum, McNeely, and Nonnemaker (2002) developed an ecological model of adolescent health risk behaviors and health outcomes. There are six domains of adolescent ecology – individual, family, peers, school, immediate community and social environments (e.g., health care facilities, exposure to prosocial or violent media, access to substances) and macrolevel environments (e.g., laws, policies, historical events) – that interact with one another and influence adolescent health. Each domain contains risk factors that increase the likelihood that an individual will engage in risk behaviors, and protective factors that decrease the likelihood of engaging in risk behaviors even in the face of risk. The latter operates in different ways. Protective factors may have a direct effect on the

outcome, irrespective of risk factors, or may buffer an adverse effect of risk factors on the outcome (i.e., a moderating effect).

The concepts of risk and protection are useful for designing intervention programs to prevent teen risk behaviors. Because some risk factors may not be preventable or alterable, strengthening protective factors while reducing risk factors would be an effective strategy (Hawkins, Catalano, & Miller, 1992). Using risk and protection models, some preventive programs have been developed and demonstrated promising results. These include reducing unsafe sexual behavior and preventing and reducing substance use among at-risk Hispanic adolescents (Pantin et al., 2009), preventing delinquent behavior among adolescents in school (Hawkins et al. 1992), and reducing various risk behaviors among sexually exploited runaway girls (Saewyc & Edinburgh, 2010).

## **Models Related to Culture**

### **Culture and ethnicity**

Culture and ethnicity are deeply embedded in the lives of ethnic minority adolescents. Culture is generally defined as a shared set of values, beliefs, behavioral norms, and practices (Foster & Martinez, 1995; Sodowsky, Kwan, & Pannu, 1995). Ethnicity is characterized by a subjective belief in common descent or a common national or geographical origin, and shared cultural patterns such as beliefs, values, languages, religions, and customs (Clarke et al., 2008; Forbes, 2010; Morning, 2008). Although these two terms are sometimes used interchangeably, they are not the same. Cultures can be created and transmitted by not only ethnic groups but also other groups of people who have similar characteristics (e.g., youth, women, students, nurses). This study focused on ethnic culture.

### **The centrality of culture in the lives of ethnic minority adolescents**

Although ecological theories take into account cultural influence on health and

development, some researchers have pointed out that they do not fully address the centrality of culture in the lives of ethnic minority youth. In traditional ecological models (e.g., Bronfenbrenner's Ecological Systems Theory; Bronfenbrenner, 1979), culture is identified as part of the macrosystem and indirectly affects individuals' health through interactions with other systems (Yasui & Dishion, 2007). On the other hand, Garcia Coll and colleagues (Garcia Coll, Crnic, Lamberty, & Wasik, 1996), and Yasui and Dishion (2007) describe culture as a central aspect of all environmental systems; culture permeates at each level, from personal characteristics, family, school, and community to society, such that it is directly experienced by the individual.

Cultural influence should be taken into account in research on ethnic minority youth. As mentioned above, the same environmental conditions influence health differently depending on the individual's characteristics. Similarly, the same environmental conditions can influence health differently depending on cultural factors. For example, the relative importance of ecological systems for health is different according to cultural values (Garcia Coll et al., 1996). Familial factors may be the most influential to ethnic groups who place a high value on family relations, whereas for those who put a greater emphasis on academic achievement, school factors may have a stronger effect on health behavior. In addition, the definitions of "health" and "healthy" or "risk" behavior are culturally embedded (Yasui & Dishion, 2007); therefore, what behavior is considered problematic or acceptable varies by culture.

### **Acculturation**

With an increase in the number of immigrants in North America and a growing interest in their health issues, researchers have paid more attention to the influence of acculturation on health outcomes (Abraido-Lanza, Armbrister, Florez, & Aguirre, 2006; Salant & Lauderdale, 2003). The term, *acculturation*, was proposed in the early 1900s by anthropologists Redfield

and colleagues, and has been defined as “phenomena which results when groups of individuals having different cultures come into continuous firsthand contact with subsequent changes in the original culture patterns of either or both groups” (Redfield, Linton, & Herskovits, 1936, p. 149, as cited in Salant & Lauderdale, 2003). Acculturation is the result of long-term contact between cultural groups and also the process by which changes in behaviors, norms, beliefs, and values occur.

Earlier acculturation models were based on a unidirectional assumption that immigrants and ethnic minority people adopt the values and practices of new or mainstream cultures while relinquishing those of their heritage cultures (Abraido-Lanza et al., 2006). It is assumed that health behaviors of more acculturated people, relative to those of less acculturated people of the same cultural heritage, are more like those of members from a new or mainstream culture (Okazaki, 2002). The earlier models, however, have been criticized for ignoring the possibility of biculturality (Salant & Lauderdale, 2003). Later models have proposed orthogonal relationships between original and mainstream cultures (e.g., Berry, 2003) allowing for the possibility that one can adhere to both cultures. Further, a recently proposed model posits multidimensionality of acculturation, which is comprised of practices, values, and identification of the heritage cultures and those of the new culture (Schwartz, Unger, Zamboanga, & Szapocznik, 2010). Changes in these dimensions may occur at different rates and in different directions. Some dimensions may change; others may not at all.

### **Ethnic identity**

A critical developmental task during adolescence is identity development. Identity is a coherent, integrated sense of self, and defines who an individual is, what he or she does, and how he or she evaluates himself or herself (Rollins & Riccio, 2005). In addition, identity involves not only a sense of self as an individual but also a person’s perception of various social

groups to which he or she belongs (Rollins & Riccio, 2005). Social identity is described as “part of an individual’s self-concept which derives from his [*sic*] knowledge of his [*sic*] membership of a social group (or groups) together with the value and emotional significance attached to that membership” (Tajfel, 1981, p. 255). For adolescents as social beings, this identity is also an essential aspect of themselves. Among various types of social identity, ethnic identity is particularly important to members of ethnic minority groups because according to social identity theory, a sense of group belonging and values attached to the group can be a source of self-esteem (Roberts et al., 1999). Ethnic identity is defined as “one’s sense of belonging to an ethnic group and the part of one’s thinking, perception, feelings, and behavior that is due to ethnic group membership” (Rotheram & Phinney, 1988, p. 13). It is generally conceptualized as self-identification as a member of the group, a sense of belonging and commitment to the group, positive or negative evaluation of the group, a sense of shared attitudes and values, and/or specific ethnic traditions and practices (e.g., language, customs) (Phinney & Rosenthal, 1992).

Identity, including ethnic identity, is not a static entity but dynamic and variable over time and context (Phinney, 1990). Drawing on Erickson’s developmental framework, Marcia (1966, 1980) operationalized the model of ego identity formation as having four statuses. The four identity statuses have been formulated based on two components: the extent to which an individual has explored and experimented with alternative directions, values, and beliefs (*exploration*), and the extent to which an individual has made a commitment to his or her choices (*commitment*) (Marcia, 1994). The first identity status is *diffusion*, which involves a lack of both exploration and commitment. Those in the *foreclosure* status have unquestioningly maintained their childhood values, beliefs, and directions, which had been instilled by the family, without exploring alternatives. Foreclosure then goes on to the *moratorium* status, in which people explore but struggle actively to arrive at a firm commitment stage. Finally, exploration

and a strong commitment lead to identity *achievement*. Likewise, Phinney (1989) proposed three ethnic identity stages on the basis of interviews with adolescents. *Unexamined ethnic identity* is characterized by a lack of exploration of ethnicity, which is similar to diffusion and foreclosure in Marcia's model. A second stage, *ethnic identity search*, involves exploration in order to understand the meaning of ethnicity to oneself; this stage is equivalent to moratorium. This stage may result from an experience that increases awareness of one's own ethnicity (Phinney, 1990). After exploration, an individual comes to have a clear, confident sense of his or her ethnicity (*achieved ethnic identity*).

Empirical studies have documented evidence that adolescents with a higher level of ethnic identity demonstrate more positive psychological adjustment. Stronger ethnic identity is positively associated with self-esteem (Costigan, Koryzma, Hua, & Chance, 2010; Phinney, Cantu, & Kurtz, 1997; Roberts et al., 1999; Romero & Roberts, 2003; Schwartz, Zamboanga, & Jarvis, 2007; Umana-Taylor, 2004), a sense of mastery, optimism, coping skills (Roberts et al., 1999), and competence (Yasui, Dorham, & Dishion, 2004); and negatively associated with depressive symptoms (Costigan et al., 2010; Roberts et al., 1999; Yasui et al., 2004), loneliness (Roberts et al., 1999), and internalizing problems (Yasui et al., 2004). The protective effect of ethnic identity is stronger for ethnic minority youth than for ethnic majority youth (Yasui et al., 2004).

In ethnically diverse countries such as Canada, all youth are inevitably faced with the task of searching for and gaining a deep understanding of the meaning of belonging to certain ethnic group(s). For members of ethnic groups that are not always seen positively in society, achieved ethnic identity may serve as a means of maintaining their dignity, perhaps protecting them from engaging in health-compromising behaviors. For immigrants from East Asian countries, most of whom are ethnic majorities in their home countries, moving to a new country



may increase awareness of their ethnicity and promote the process of ethnic identity development. Ethnic identity achievement may help them to overcome difficulties in their new environments.

### **Literature Review**

This section reviews literature concerning 1) sexuality in Asian<sup>1</sup> cultures, 2) sexual activity among Asian youth in North America, and 3) factors associated with adolescent sexual activity. It then discusses the limitations of existing research.

#### **Sexuality in Asian Cultures**

##### **Sexual conservatism**

Sexuality in most Asian cultures has been characterized by conservative values. Open discussions about sexual topics have been traditionally considered inappropriate, and sexual intercourse during adolescence or before marriage has been viewed as unacceptable (Chan, 1994). According to Chan (1994), sexual conservatism is caused by strong family unity and severe restrictions of behaviors in Asian cultures. Traditionally most Asian cultures have valued interdependence and family integrity (Chan, 1994; Okazaki, 2002). To keep the highly interdependent social order, open expression of sexuality is tightly restricted (Okazaki, 2002). Expressing sexual desire is viewed as indulging individual needs, which should be put after collective needs, and may bring shame or dishonor to the family (Chan, 1994). These traditional sexual values and norms may remain ingrained after immigration at least among parents of adolescents. In qualitative studies, many Asian American young adults reported that they had received sexually prohibitive messages directly or indirectly from their parents (Kim & Ward, 2007; Kim, 2009), and Taiwanese mothers of adolescent girls in the US disapproved of sexual

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<sup>1</sup> In the literature reviewed here, “Asian” included East Asian (e.g., Chinese, Korean, Japanese), Southeast Asian (e.g., Filipino, Vietnamese), and South Asian (e.g., Asian Indian).

initiation before marriage or during high school (Kao, Guthrie, & Loveland-Cherry, 2007).

With increased Western influences, more liberal sexual attitudes have become accepted among young people in Asian countries (Higgins & Sun, 2007; Higgins, Zheng, Liu, & Sun, 2002; Wang & Davidson, 2006; Zhang, Li, Li, & Beck, 1999). Many youth are experiencing contradictions between traditional sexual values and increasing openness toward sexuality (Ryu, Kim, & Kwon, 2007; Zhang et al., 2004). According to a review of adolescent sexual behavior in contemporary China (Yu, 2010), 34% - 80% of senior high school students approved of premarital sex. In Tokyo, only one in ten senior high school students disapproved of sexual intercourse during high school (Tanomura et al., 2005).

### **Sexual activity among youth in East Asian countries**

While many senior high school students in East Asian countries hold permissive attitudes toward premarital or teen sexual intercourse, conservative views of sexuality may still influence their actual sexual behavior. A review of Chinese studies showed that in most studies, about 5% of senior high school students reported having had sexual intercourse (Yu, 2010). In a nationally representative survey of South Korean students in grades 7 through 12, 6% of boys and 3% of girls initiated sexual intercourse (Kim & Kim, 2010). A large-scale, school-based survey in Japan showed that among senior high school students, 27% of boys and 30% of girls had ever had sexual intercourse (Japanese Association for Sex Education, 2006). In Tokyo, senior high school students who had ever had intercourse numbered at 22% of boys and 26% of girls (Tanomura et al., 2005).

Rates of sexual experience among East Asian youth appear to be lower than those in North America although caution should be taken when comparing these data due to differences in sampling methods (i.e., probability versus non-probability) and the age ranges of the samples. Among a national representative sample of the US students in grades 9 to 12 from the 2009

Youth Risk Behavior Survey (YRBS), nearly half had ever had sexual intercourse (Centers for Disease Control and Prevention [CDC], 2010). In BC, approximately one in four 15- and 16-year-old students and nearly half of those aged 17 or older were sexually active (Saewyc, Taylor, Homma, & Ogilvie, 2008). Overall, it appears that sexual initiation during adolescence is still not normative in East Asian countries.

### **Sexual activity among Asian youth in North America**

Asian youth in Canada and the US tend to delay initiating sexual intercourse. Studies have consistently shown that Asian adolescents and young adults are less likely than those from other ethnic groups to report ever having sexual intercourse both in the US (Cavazos-Rehg et al., 2009; Grunbaum, Lowry, Kann, & Pateman, 2000; Kuo & St Lawrence, 2006; Lee & Rotheram-Borus, 2009; Lowry et al., 2011; O'Sullivan, Cheng, Harris, & Brooks-Gunn, 2007; Sasaki & Kameoka, 2008; Schuster et al., 1998) and in Canada (Meston, Trapnell, & Gorzalka, 1996; Poon & Franz, 2000; Woo & Brotto, 2008). Among participants in the 2003 BC AHS, nearly 11% of East Asian students in grades 7 to 12 reported ever having sexual intercourse (Homma & Saewyc, 2008) compared with 23 - 24% of the total sample (Saewyc et al., 2008). Meston and colleagues (Meston et al., 1996) examined differences in sexual behavior between East and Southeast Asian undergraduate students and non-Asian undergraduates in BC. Thirty-five percent of Asian men and 36% of Asian women reported having had sexual intercourse, compared with 63% of non-Asian men and 69% of non-Asian women. In another Canadian study of Asian (80.5% Chinese) and Euro-Canadian undergraduates (Woo & Brotto, 2008), 40% of Asian and 57% of Euro-Canadian students had ever had sexual intercourse. In the US, Lowry and colleagues (Lowry et al., 2011) reported that in a sample generated by combining four datasets of YRBSs (2001 – 2007), 23% of Asian American high school students had ever had sexual intercourse compared with 66% of Black, 51% of Hispanic, 47% of Pacific

Islander, and 43% of White.

However, once Asian youth become sexually experienced, they appear to be as likely as other ethnic groups to engage in risky sexual behavior. Hou and Basen-Engquist (1997) found that Asian youth who were sexually active during the past three months were more likely than their White peers to have had multiple sexual partners during that period. Unprotected sexual intercourse among Asian youth appears to be as prevalent as among their peers from other ethnic backgrounds. A higher percentage of Asian adolescents than peers of other ethnicities used a condom at first intercourse (Schuster et al., 1998); however, Asian adolescents were less likely than or as likely as their cross-ethnic peers to report condom use at most recent intercourse (Grunbaum et al., 2000; Lee & Rotheram-Borus, 2009; Lowry et al., 2011; Sasaki & Kameoka, 2008) and consistent condom use (Schuster et al., 1998). Moreover, a study of university students in BC showed that Asian students were less knowledgeable about sexuality than non-Asian students (Meston, Trapnell, & Gorzalka, 1998). This lack of sexual knowledge, along with engaging in these risky sexual behaviors, may put Asian youth at risk of negative consequences such as STIs.

### **Factors Associated with Adolescent Sexual Activity**

This section summarizes empirical research findings on factors associated with sexual activity among adolescents in North America. Outcome variables in this review included initiation of sexual intercourse (e.g., having ever had sexual intercourse in cross-sectional studies or sexual initiation between waves in longitudinal studies) and risky sexual behaviors such as multiple sexual partners, inconsistent contraceptive use, and sexual intercourse under the influence of alcohol or drugs. Among a number of studies on this topic, large-scale, school-based, and/or longitudinal studies, rather than cross-sectional research with small convenience samples, were mainly (not exclusively) selected for review because of greater

generalizability or predictive power. Due to a dearth of studies on Asian adolescents, most research discussed here included either no or a small percentage of Asians. In keeping with the ecological framework, explanatory variables were divided into five levels of systems or contexts: individual, family, school, peer, and culture.

### **Individual-level factors**

Age is a strong risk factor for sexual initiation. With increased age, more adolescents start engaging in sexual intercourse (Bersamin, Walker, Fisher, & Grube, 2006; Browning, Leventhal, & Brooks-Gunn, 2004; Hahm et al., 2006; Harvey & Spigner, 1995; Langille, Hughes, Murphy, & Rigby, 2005; Perkins, Luster, Villarruel, & Small, 1998; Ramisetty-Mikler, Caetano, Goebert, & Nishimura, 2004; Saewyc et al., 2008; Santelli, Lowry, Brener, & Robin, 2000; Small & Luster, 1994). In BC, for example, less than 10% of early-teen students were sexually active compared with nearly half of late teenagers (Saewyc et al., 2008). For both male and female Asian American adolescents, increased age was also associated with greater likelihood of sexual initiation (Hahm et al., 2006; Ramisetty-Mikler et al., 2004).

Besides actual age, pubertal development influences adolescent sexual activity. Several researchers have identified earlier physical maturity (e.g., looking older than same-age peers; a height spurt; growth of facial and underarm hair, and voice changes for boys; breast growth and menarche for girls) as a risk factor. Adolescents' perceptions of more advanced physical maturation predicted sexual onset (Browning et al., 2004; Dittus & Jaccard, 2000; Roche et al., 2005). Likewise, a more mature appearance at age 13, rated by coders, predicted involvement in sexual intercourse by age 16 (Siebenbruner, Zimmer-Gembeck, & Egeland, 2007) and a greater number of sexual partners at age 16 (Zimmer-Gembeck & Collins, 2008). Moreover, for girls, earlier menarche predicted sexual initiation during adolescence (Marin, Kirby, Hudes, Coyle, & Gomez, 2006).

Gender is another important demographic factor associated with sexual behavior; however, the results were not consistent. A meta-analysis of seven national adolescent surveys in the US, Great Britain, and Australia reported that compared with girls, boys were more likely to have ever had sexual intercourse and have first intercourse at a younger age, although the gender differences were small (Petersen & Hyde, 2010). In Canada, the 1996/1997 cycle of the National Population Health Survey (Smylie, Medaglia, & Maticka-Tyndale, 2006) and the Canadian Youth, Sexual Health and HIV/AIDS Study, conducted in 2002-2003 (Boyce et al., 2006), showed that girls were more likely to report ever having intercourse. The 2008 BC AHS did not find this gender difference (Smith et al., 2009). By contrast, past population-based studies have consistently shown that higher proportions of sexually active boys than sexually active girls reported multiple sexual partners (Boyce et al., 2008; CDC, 2010; Petersen & Hyde; Rotermann, 2005; Saewyc et al., 2008; Smylie et al., 2006), and condom use at last intercourse (CDC, 2010; Petersen & Hyde, 2010; Saewyc et al., 2008; Smylie et al., 2006).

For Asian American and Pacific Islander (AAPI) youth, Grunbaum and colleagues (Grunbaum et al., 2000) did not find gender differences in prevalence of any sexual activity. Hahm and colleagues (Hahm et al., 2006), on the other hand, found that among native-born Asian American students who spoke English at home, a higher proportion of girls than boys reported ever having sexual intercourse.

Self-esteem has been investigated in numerous studies on teen risk behaviors. Despite its popularity in health research, the relationship between self-esteem and adolescent sexual behavior is still inconclusive. Goodson and colleagues (Goodson, Buhi, & Dunsmore, 2006) conducted a systematic review to examine this relationship. Of 138 studies reviewed, more than half (62%) did not find a statistically significant association, and a quarter indicated an inverse relationship. The negative association, however, suggests the possibility that engaging in sexual

activity results in lower self-esteem. Using a US national representative sample of youth in grades 7 to 12 in the National Longitudinal Study of Adolescent Health (Add Health), Longmore and colleagues (Longmore, Manning, Giordano, & Rudolph, 2004) explored the effect of self-esteem at Wave 1 (1994 – 1995) on sexual debut between Wave 1 and Wave 2 (1996). Although the main effect was not found for either gender, the self-esteem-by-age interaction was identified for boys. For older boys, self-esteem was a risk factor: higher self-esteem at Wave 1 predicted initiating sexual intercourse between waves. Hahm and colleagues also used Add Health data, but limited their analyses to AAPI youth. Self-esteem at Wave 1 did not predict being sexually active at Wave 2 (Hahm et al., 2006) or first sexual intercourse before age 15 (Hahm et al., 2008).

The findings described above might suggest that self-esteem is not a strong factor in teen sexual activity. However, this may be due in part to the fact that most research has used *global* self-esteem measures (Goodson et al., 2006). As Rosenberg and colleagues argued (Rosenberg, Schooler, Schoenbach, & Rosenberg, 1995), “specific self-esteem is most relevant to *behavior*, whereas global self-esteem is most relevant to *psychological well-being*” (p. 144). In their recent longitudinal study, Laflin and colleagues (Laflin, Wang, & Barry, 2008) found that higher peer self-esteem predicted sexual onset, whereas home self-esteem or school self-esteem was not associated with sexual onset. As with self-efficacy, self-esteem that affects sexual behavior may be context-dependent.

Rather than self-esteem, other psychological attributes such as depression may be more strongly associated with sexual activity. Higher levels of depressive symptoms and suicidal ideation or attempts were related to sexual initiation (Longmore et al., 2004; Perkins et al., 1998; Smith, 1997). On the other hand, in Hahm and colleagues’ study (Hahm et al., 2008), greater depression did not predict sexual debut before age 15 among AAPI youth.

Among behavioral factors, substance use is a strong correlate or predictor of involvement in sexual activity. Drinking alcohol, smoking cigarettes, and using marijuana or other illicit drugs have been identified as risk factors (Bersamin et al., 2006; Devries, Free, Morison, & Saewyc, 2009; Hahm et al., 2006; Hellerstedt, Peterson-Hickey, Rhodes, & Garwick, 2006; Hlaing, de la Rosa, & Niyonsenga, 2007; Lammers, Ireland, Resnick, & Blum, 2000; Rink, Tricker, & Harvey, 2007; Siebenbruner et al., 2007). Compared with risk behaviors, the association between prosocial behaviors and sexual activity was not often studied. Oman and colleagues (Oman, Vesely, Kegler, McLeroy, & Aspy, 2003) examined youth assets associated with sexual abstinence and found that 15- to 17-year-old youth who engaged in good health practice (eating well and exercising), and 18- or 19-year-old youth with greater involvement in community activities (e.g., volunteering) were more likely to be abstinent. Among adolescents in BC, weekly supervised extracurricular activities in the past year (only for females) and volunteering in the past year were associated with decreased odds of ever having sexual intercourse (Saewyc et al., 2008).

Many studies have documented the link between a history of sexual or physical abuse and sexual behavior. Sexual abuse history is associated with ever having sexual intercourse (Marín, Coyle, Gómez, Carvajal, & Kirby, 2000; Perkins et al., 1998; Small & Luster, 1994) and engaging in risky sexual behaviors (Hlaing et al., 2007; Luster & Small, 1994; Saewyc et al., 2006; Saewyc, Magee, & Pettingell, 2004; Upchurch & Kusunoki, 2004). Similarly, adolescents who have experienced physical abuse are more likely than non-abused peers to have ever had sexual intercourse (Perkins et al., 1998; Small & Luster, 1994). Although a history of abuse is placed into individual-level factors, this experience lies within interpersonal relationships and occurs in familial, extra-familial, or both contexts.



### **Family factors**

Family is a primary agent of socialization to help children and adolescents to become healthy sexual beings (Davis & Friel, 2001; Miller, Kotchick, Dorsey, Forehand, & Ham, 1998). Various family-related factors, ranging from family demographic backgrounds to parenting practice and family relationships, have been investigated with regard to their associations with adolescent sexual activity.

Family structure is generally related to sexual behavior. Adolescents who live in two-parent households tend to delay sexual initiation (Ali & Dwyer, 2011; Browning et al., 2004; Davis & Friel, 2001; Laflin et al., 2008; Longmore et al., 2004; Roche et al., 2005; Santelli et al., 2000). Delay of sexual intercourse is also associated with higher levels of parental education (Ali & Dwyer; Langille et al., 2005; Longmore, Manning, & Giordano, 2001; Longmore et al.; Santelli et al.).

Family connectedness and positive parent-adolescent relationships are powerful factors for postponing sexual intercourse (Browning et al., 2004; Davis & Friel, 2001; Deptula, Henry, & Schoeny, 2010; Resnick et al., 1997; Saewyc et al., 2008; Sieving, McNeely, & Blum, 2000). In Hahm et al.'s Add Health study (2006), a higher level of parental attachment decreased odds of sexual initiation by Wave 2 for Asian American girls, but not for Asian American boys.

Adolescent sexual initiation has been associated with perceived parental approval or disapproval of teen sexual intercourse. Adolescents with a perception of parental disapproval are more likely to delay sexual debut (Hahm et al., 2008; Miller, Forehand, & Kotchick, 2000; Resnick et al., 1997; Sieving et al., 2000; Small & Luster, 1994). Furthermore, Sieving et al. (2000) found that mothers' stated disapproval and adolescents' perceptions of maternal disapproval were most closely related when adolescents reported higher connectedness with their mothers. Adolescents who feel connected with their parents may accurately perceive

parental sexual attitudes and conform to parental expectations. As posited by the social development model, in which the individual engages in behaviors and holds norms and values that conform to those held by significant others or institutions to whom he or she is bonded (Catalano & Hawkins, 1996; Catalano, Haggerty, Oesterle, Fleming, & Hawkins, 2004), adolescents bonded strongly to family members who disapprove of risky behaviors may be unlikely to engage in such behaviors.

Another key variable associated with teen sexual behavior is parental monitoring. Parents monitor their adolescents' activities directly or indirectly. Direct monitoring includes not leaving adolescents unsupervised at home; indirect monitoring includes knowing adolescents' whereabouts and activities. Adolescents who perceive their parents as monitoring them or whose parents report a higher level of monitoring are less likely to initiate sexual intercourse or engage in risky sexual behavior (Donahue et al., 2010; Huebner & Howell, 2003; Li, Stanton, & Feigelman, 2000; Longmore et al., 2001; Small & Luster, 1994; Smith, 1997).

### **School factors**

As children grow, they spend more time outside of the family. Consequently, extrafamilial influences on child and adolescent development become stronger. For students, the school environment, including relationships with teachers and other students, is a pivotal factor in influencing health behavior. Connectedness to school, a concept that emerges from student-school interactions (Resnick et al., 1997), has been identified as a major protective factor. Adolescents with higher school connectedness are more likely to delay the onset of sexual intercourse (Bersamin et al., 2006; Resnick et al., 1997; Rink et al., 2007; Small & Luster, 1994). A longitudinal study showed that verbal abuse by teachers was a predictor of sexual initiation by grade 7 (Brendgen, Wanner, & Vitaro, 2007). Hahm et al. (2006) found that among Asian American girls, higher school attachment was associated with sexual abstinence. No

association was observed among Asian American boys.

### **Peer factors**

Peer groups play a major role in adolescent sexual activity. Adolescents are often susceptible to their peers' sexual norms, attitudes, and behavior. Perceived peer permissive attitudes toward teen sexual activity are associated with sexual initiation (Bersamin et al., 2006; Carvajal et al., 1999; DiIorio et al., 2001; Marín et al., 2000). Perceived or actual peer involvement in sexual intercourse is also related to ever having sexual intercourse (Ali & Dwyer, 2011; Bersamin et al., 2006; Nahom et al., 2001). In addition, affiliation with peers engaged in risky behavior predicts sexual onset (Browning et al., 2004; French & Dishion, 2003; Roche et al., 2005).

### **Culture factors**

#### *Acculturation*

**Measures.** In public health research, acculturation measures that have been predominantly used are temporal indicators such as nativity (foreign-born or native-born), length of residence in the receiving country, and generational status; and linguistic indicators such as ethnic heritage or national language use and proficiency (Abraido-Lanza et al., 2006). Temporal indicators (nativity and length of residence) are proxy measures of the amount of exposure to mainstream culture in a host country (Guilamo-Ramos, Jaccard, Pena, & Goldberg, 2005), working from the assumption that greater exposure to a host country leads to absorbing its cultural patterns, which then leads to greater acculturation (more precisely, assimilation) (Greenman & Xie, 2008; Thomson & Hoffman-Goetz, 2009). Some researchers (e.g., Guilamo-Ramos et al., 2005) regard heritage language use at home as a lower level of assimilation to the host country's culture. This may not be the case, given the orthogonal model of acculturation. That is, individuals can maintain their heritage cultural patterns while

embracing the host culture (Berry, 2007). Linguistic indicators are thus considered rough measures for assessing a link with one's culture of origin (Greenman & Xie, 2008), rather than one's assimilation to a host country.

While widely used, these proxy measures have been criticized for their lack of ability to capture the complexity of acculturation, as well as for their conceptualization of acculturation as a linear process (Abraido-Lanza et al., 2006; Zambrana & Carter-Pokras, 2009). Temporal and linguistic indicators do not fully reflect such a complex and flexible phenomenon, but may tap some aspects of acculturation. Among Chinese Canadian university students, length of residence in Canada and nativity (born in Canada) were predictors of psychological and behavioral orientations toward Canadian culture (Chia & Costigan, 2006b). Another study of Chinese Canadian university students indicated an association between ethnic language use at home and behavioral orientations toward their ethnic cultures (Chia & Costigan, 2006a).

**Relations to sexual behavior.** Using temporal or linguistic indicators, researchers have explored whether a level of acculturation is associated with sexual behavior among Asian youth in North America. Most studies were conducted in the US and few in Canada. Foreign-born Asian college students initiated sexual intercourse at a later age than their US-born peers (Cochran et al., 1991). Among Chinese American adolescents, there was no significant difference between US-born and foreign-born groups on sexual initiation (Kuo & St Lawrence, 2006; Greenman & Xie, 2008). In BC, Meston and colleagues (Meston et al., 1996) studied the relationship between length of Canadian residency and sexual behavior among a convenience sample of East and Southeast Asian university students. They did not find a significant difference.

Temporal indicators alone may not be a strong predictor for Asian youth's sexual behavior. Rather, linguistic indicators may be more powerful in predicting sexual behavior. For

example, Schuster and colleagues (Schuster et al., 1998) found that AAPI students who spoke English at home were more likely than those who spoke a language other than English at home to have had sexual intercourse during the past year. Hahm and colleagues (Hahm et al., 2006) found that Asian American girls who spoke English at home, regardless of their birthplace, were more likely than foreign-born Asian American girls speaking a language other than English at home to have ever had sexual intercourse. For Asian American boys, sexual experience did not differ by level of acculturation measured by birthplace and primary home language. A study of Chinese youth in the US reported that English use at home was associated with a younger age at first intercourse (Greenman & Xie, 2008). Language use has been also used as a measure of acculturation in research with Hispanic/Latino youth. Generally, Spanish-speaking Hispanic adolescents are less likely than their English-speaking Hispanic peers to report lifetime sexual intercourse (Adam, McGuire, Walsh, Basta, & LeCroy, 2005; Guilamo-Ramos et al., 2005). These results suggest the need to use both temporal and linguistic indicators to assess the amount of exposure to the respective cultures of one's host country and one's ethnic origin.

Contrary to the findings from the majority of studies, a recently published study showed the association between higher levels of acculturation and *later* sexual initiation among AAPI youth (Kao, Loveland-Cherry, Guthrie, & Caldwell, 2011). In a secondary analysis of the Add Health data, Kao and colleagues (2011) found that English use at home at Wave 1 was associated with *later* sexual onset at Wave 1. As well, a longer stay in the US was associated with *later* initiation at Wave 2. Bivariate correlational analyses showed that higher levels of acculturation were associated with *earlier* initiation (Kao, 2008). However, when mother-adolescent interactions and maternal attitudes about teen sex were included in a structural equation model, the association between acculturation and sexual debut was opposite to those from the bivariate analyses. Speaking English at home was positively associated with

mothers' reports of sexual discussion and connectedness with their adolescent children as well as adolescents' reports of maternal disapproval of teen sex. Mothers whose children spoke English at home were assumed to be more acculturated; thus, they may have been more skilled at talking about sex-related issues and conveying their expectations to adolescents (Kao et al., 2011). Adolescents' sexual initiation may be influenced by maternal discussion about sex (e.g., DiIorio, Kelley, & Hockenberry-Eaton, 1999), mother-adolescent connectedness (e.g., Sieving et al., 2000), and maternal sexual attitudes (e.g., Hahm et al., 2008); however, no significant association was observed in Kao et al.'s study. Kao and colleagues explained later initiation among students with longer residence in the US as possibly being due to a lower level of acculturation stress and a higher level of resistance to peer pressure.

Kao and colleagues (Kao et al., 2011) used the same datasets as Hahm and colleagues (Hahm et al., 2006) and Greenman and Xie (2008), who found contradictory results on the relationship between acculturation and sexual initiation. There were several differences between the three studies. First, Kao et al. selected Asian Americans and Pacific Islanders between the ages of 15 and 17 (52% Filipino, 36% Chinese, Korean, or Japanese), whereas Hahm et al. analyzed data from Asian American students between the ages of 12 and 18 (41% Chinese, Korean, or Japanese, 21% Filipino). Greenman and Xie analyzed data separately for Chinese youth and Filipino youth. Kao et al. and Hahm et al. used Wave 1 (1995) and 2 (1996) data; Greenman and Xie used Wave 1, 2, and 3 (2001 – 2002) data. Kao et al. also used data collected from mothers. Second, Kao et al. and Greenman and Xie used separate acculturation indicators (primary home language, years in the US, and birthplace); Hahm et al. created four acculturation groups by combining two variables (primary home language and birthplace). Third, dependent variables and analytical strategies were different. Kao et al. used structural equation modeling with age at first intercourse as a continuous outcome. Hahm et al. conducted multivariate

logistic regression analyses with a dichotomous variable of ever having sexual intercourse at Wave 2. Using the Cox proportional hazards model, Greenman and Xie computed the hazard rate of sexual initiation. These differences may account for the inconsistent findings (Kao et al., 2011).

### ***Ethnic identity***

**Measures.** Ethnic identity as a critical component of the self has been examined in adolescent research. Among various measures of ethnic identity, the most frequently used is the Multigroup Ethnic Identity Measure (MEIM). Drawing on Marcia's developmental perspective and Tajfel's social identity theory, Phinney (1992) constructed this measure to examine ethnic identity in youth across diverse ethnic groups. The MEIM originally included 14 items assessing three core components of ethnic identity: a) a sense of belonging and affirmation, b) ethnic identity achievement (exploration and resolution of identity issues), and c) ethnic practices; additionally it incorporated six items that assess attitudes toward other groups. The 20-item MEIM was administered to ethnically diverse groups of high school and college students, and found that a two-factor solution was optimal. One factor represented *Ethnic Identity*; the other was *Other-Group Orientation* (OGO).

The 14-item MEIM (excluding OGO items) was later revised by eliminating two items when used for a study of early adolescents (Roberts et al., 1999). A two-factor structure of the 12-item MEIM fit the data. The two factors are *Exploration*, which involves learning more about one's ethnic group and participation in ethnic cultural practices, and *Commitment* reflecting a strong sense of belonging and a clear sense of ethnic understanding. Phinney and Ong (2007) recently revised the measure. The Multigroup Ethnic Identity Measure – Revised (MEIM-R) consists of two factors (*Exploration* and *Commitment*); each factor has three items. The two-factor model fit for an ethnically diverse sample of university students. The MEIM-R

was administered to university students (Wei, Alvarez, Ku, Russell, & Bonett, 2010; Yoon, 2011), but has not yet been administered to younger populations.

The MEIM has been psychometrically tested with ethnically diverse populations in the US and other countries. The two-factor structure was supported by most studies (Avery, Tonidandel, Thomas, Johnson, & Mack, 2007; Dandy, Durkin, McEvoy, Barber, & Houghton, 2008; Gazis, Connor, & Ho, 2010; Pegg & Plybon, 2005; Spencer, Icard, Harachi, Catalano, & Oxford, 2000; Yancey, Aneshensel, & Driscoll, 2001; Yoon, 2011), whereas some studies supported a one-factor structure (Worrell, Conyers, Mpofo, & Vandiver, 2006) or a three-factor model (Gaines et al., 2010; Juang & Nguyen, 2010; Lee & Yoo, 2004). The factor structure of the MEIM may vary across different groups.

Despite the popular use of the MEIM, a handful of studies have investigated measurement invariance, that is, whether a set of items represents the same conceptual framework, and measures the construct of interest on the same metric across different groups defined by a given characteristic (e.g., age, ethnicity). Measurement invariance is an important psychometric property when scores are compared across groups. If measurement invariance is not supported, the inferences drawn from the scores may not be valid. Differences in observed means may not reflect *true* differences in the construct and may be due to measurement artifact resulting from different psychometric responses to the scale items (Cheung & Rensvold, 2002). To my knowledge, all of the published studies on invariance of the MEIM targeted different ethnic groups (Avery et al., 2007; Gazis et al., 2010; Roberts et al., 1999; Spencer et al., 2000; Yoon, 2011); none has examined measurement invariance within the same ethnic group having different characteristics. The MEIM may not be invariant among East Asian adolescents, given cognitive development during adolescence or cultural influences on response styles.

**Relations to psychological well-being and sexual behavior.** Ethnic identity has been



associated with psychological well-being such as higher self-esteem (Costigan et al., 2010; Phinney et al., 1997; Roberts et al., 1999; Schwartz et al., 2007; Smith & Silva, 2010; Umana-Taylor, 2004) and lower levels of depressive symptoms (Costigan et al., 2010; Roberts et al., 1999; Smith & Silva, 2010; Yasui et al., 2004). A few studies have examined the relationship between ethnic identity and sexual activity. The results were not consistent across ethnic or age groups. Stronger ethnic identity was associated with lower odds of ever having sexual intercourse among Latina adolescents (Jarrett, 2011), whereas the opposite was observed among Cuban American college women (Raffaelli, Zamboanga, & Carlo, 2005). A significant association was not found among at-risk Hispanic adolescents in grade 8 (Schwartz et al., 2009). There was no research on Asian adolescents.

### **Cumulative Risk and Protection**

Each factor influences the likelihood of involvement in sexual activity, and some factors are more influential than others. Furthermore, the more risk factors adolescents have, the more likely they are to have engaged in sexual intercourse (Perkins et al., 1998; Small & Luster, 1994). Similarly, adolescents with more assets are less likely to be sexually experienced (Murphey, Lamonda, Carney, & Duncan, 2004; Oman, Vesely, Aspy, McLeroy, & Luby, 2004). Thus, multiple protective factors may offset the negative effects of multiple risk factors.

### **Limitations of Existing Studies**

Despite numerous studies on factors associated with adolescent sexual activity, understanding of those factors for Asian teens in North America, especially in Canada, is limited. Furthermore, in most studies, East Asians were combined with Southeast Asians, South Asians, and/or Pacific Islanders (e.g., Grunbaum et al., 2000; Hahm et al., 2006; Hahm et al., 2008; Meston et al., 1996; Schuster et al., 1998). These different “Asian” groups do not necessarily share language, religion, immigration histories, or cultural norms and beliefs; thus, they ought

not to be regarded as the same ethnic group.

To examine the unique contribution of each factor in explaining sexual behaviors, multivariate logistic or linear regressions have been used. In a real life setting, many adolescents are exposed to more than one risk; at the same time, they have multiple protections. Therefore, cumulative risk and protection analyses are useful in understanding the complex relationship between factors and health behavior among adolescents.

Among factors associated with sexual activity in ethnic minority youth, including Asian youth, acculturation is one of the variables that have been most frequently explored. However, the majority of research has used proxy measures of acculturation such as nativity, length of stay in the host country, and/or primary language spoken at home (home language). While these measures have been useful in explaining differences in sexual activity between native-born and immigrant adolescents, they are limited in their capacity to be manipulated. In other words, it is impossible or difficult to change adolescents' birthplace or home language. In contrast to acculturation, another cultural factor, ethnic identity, is amenable to change, but has not been sufficiently studied, particularly among Asian teens in Canada. It is thus necessary to explore whether or not strong ethnic identity serves as a protective factor against sexual activity among adolescents of Asian heritage.

## **Chapter 2. The Present Study**

### **Specific Aims**

The overall objectives of the present study were to document the prevalence of sexual activity, and to investigate factors associated with an increased or a decreased likelihood of sexual initiation among East Asian adolescents in BC. Although the onset of sexual intercourse may be viewed as normative for middle to late teens (Graber, Brooks-Gunn, & Galen, 1998), involvement in sexual intercourse, regardless of whether or not it is unsafe, is chosen as an outcome variable in this study for two reasons. First, considering the low rates of sexual intercourse among Asian adolescents in North America and East Asian countries, sexual initiation during adolescence appears not to be considered normative within the culture. Second, owing to a lack of research on sexual behavior among Asian youth, we need to first identify factors associated with initiating sexual intercourse that may lead to activity compromising one's sexual health.

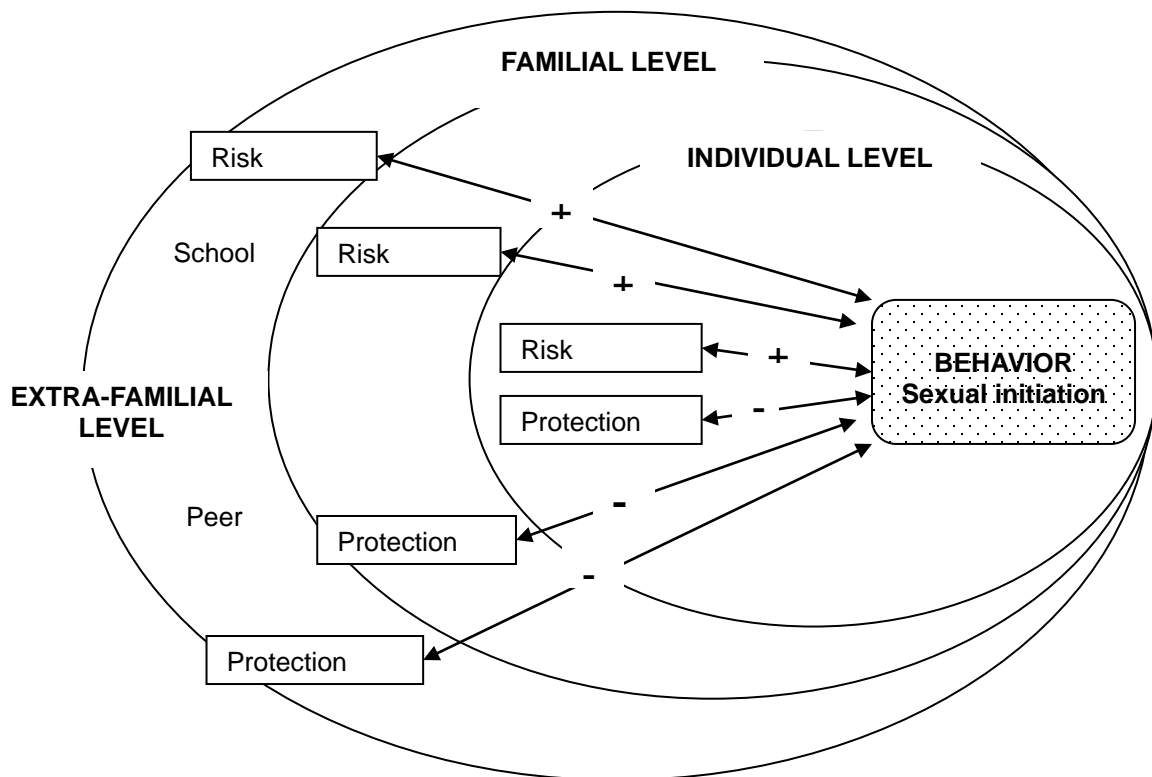
Specific aims are as follows:

8. To document the prevalence of sexual behavior and reasons for abstaining from sexual intercourse
9. To evaluate the psychometric properties of scores on the 6-item Multigroup Ethnic Identity Measure - Revised
10. To examine measurement invariance across age groups and groups with differing degrees of cultural exposure
11. To examine the relationship between ethnic identity and psychological well-being.
12. To investigate the relationship between ethnic identity and sexual initiation
13. To identify risk and protective factors associated with sexual initiation
14. To examine the likelihood of sexual initiation, given a specific set of risk and protective

factors

### Conceptual Model for the Study

The current study was guided by ecological risk and protection frameworks (Blum et al., 2002; Bronfenbrenner, 1979; Green et al., 1996; Grzywacz & Fuqua, 2000; McLeroy et al., 1988; Stokols, 1992), with an emphasis on the centrality of culture in the lives of ethnic minority youth (Garcia Coll et al., 1996; Yasui & Dishion, 2007). For the purpose of the study, adolescents' ecological systems include three levels: a) individual, b) familial, and c) extra-familial levels. Cultural factors are assumed to exist at each level. The conceptual model for the proposed study is illustrated in Figure 2.1.



**Figure 2.1. Ecological Risk and Protection Model for Sexual Activity**

## **Data Source**

### **British Columbia Adolescent Health Survey**

A secondary analysis was performed using data from the 2008 BC AHS. The BC AHS is a cross-sectional, school-based survey that has been conducted every five to six years by the McCreary Centre Society. The survey was designed to collect information on the physical and emotional health, and health behavior of adolescents throughout the province of BC as well as factors that may influence their health.

The BC AHS included a cluster-stratified random sample of classrooms in grades 7 through 12 in public schools across the province (Saewyc et al., 2008; Saewyc & Green, 2009). The sampling frame including all classrooms in BC public schools was first stratified by health service delivery areas and grade. The sample was then selected from school districts that agreed to participate in the survey. Oversampling was done for classrooms in school districts that required signed parental consent. Each respondent was assigned sampling weights to adjust for unequal probabilities of selection and differential response rates in order to provide a provincial representation of all regular public students throughout BC.

With signed parental consent or parental notification with student consent, adolescents in selected classrooms completed an anonymous, paper-and-pencil questionnaire. The BC AHS was administered by trained public health nurses or nursing students during regular school hours. The survey included questions about demographic information, physical and emotional health status, risk and health behaviors, and potential risk and protective factors such as a sense of connection to family, school, and culture. These items were drawn from existing adolescent health surveys in North America or newly developed and pilot-tested based on community consultation (Saewyc et al., 2008; Saewyc & Green, 2009).

The present study used data records from any students who marked “East Asian (e.g.,

Chinese, Japanese, Korean, etc)” as their cultural or ethnic background (unweighted N = 4,311). These students represent more than 48,000 students of East Asian ethnicity enrolled in BC. Those adolescents were selected based on the assumption that they have been exposed to East Asian cultures as their ethnic heritage in familial and other contexts. Both single-ethnic and multi-ethnic East Asian students were thus included for analysis. All analyses, except psychometric analysis in Chapter 4, were stratified by gender, and conducted using SPSS Complex Samples version 18.0 to adjust for complex sampling designs and weighted data.

### **Non-Response Rates of Sex-related Questions**

The BC AHS participants were informed that they were free to withdraw from the study at any time and to refrain from answering any questions when they did not want to. Due in part to traditional cultural norms that discourage open discussion of sex, some East Asian students may have felt reluctant to answer questions related to sexual activity. High non-response rates may affect the precision of population estimates and the ability to generalize from the results. In her review of Chinese research, Yu (2010) reported high non-response rates in some studies (e.g., 14% of university students and 55% - 74% of junior high school students did not answer whether they had had sex). But such high non-response rates were not reported by a large-scale Japanese survey. Non-response rates were about 3% of junior high school students and about 2% of senior high school students (Japanese Association for Sex Education, 2006).

A minority of East Asian participants in the BC AHS did not respond to one or more questions related to sexual behavior. Non-response rates were approximately 3% for East Asian boys and 2% for East Asian girls (Table 2.1). In all but one question (ever having oral sex), boys were less likely than girls to answer the questions. For the purpose of comparison, non-response rates in other risk behaviors were also computed (Table 2.1). The percentages ranged from 1.2% in lifetime alcohol use to 3.3% in weapon carrying in the past 30 days among boys and from

0.9% in lifetime cigarette smoking to 2.1% in weapon carrying among girls. Boys were more likely than girls to skip questions about lifetime alcohol use, lifetime marijuana use, and weapon carrying in the past 30 days. No gender differences were found in the other five items. Among East Asian students, 1.6% of boys and 0.5% of girls skipped all 13 sex-related questions. These rates appeared to be similar to non-response rates for substance-use questions including alcohol consumption, marijuana use, and cigarette smoking; and lower than those for illicit drug use (Table 2.2).

**Table 2.1. Percentages of Non-Response Among East Asian Students**

	Boys (22,601)	Girls (25,507)
<b>Sex-related questions</b>		
Ever had oral sex	2.8	2.0
Ever had sexual intercourse	3.2	1.7 <sup>M**</sup>
Age at first intercourse <sup>a</sup>	3.1	1.7 <sup>M*</sup>
Age of first sexual partner <sup>a</sup>	3.1	1.7 <sup>M**</sup>
Number of male sexual partners, lifetime <sup>a</sup>	3.6	1.8 <sup>M**</sup>
Number of female sexual partners, lifetime <sup>a</sup>	3.3	2.2 <sup>M**</sup>
Number of sexual partners, past year <sup>a</sup>	3.3	1.8 <sup>**</sup>
Substance use before last intercourse <sup>a</sup>	3.3	1.7 <sup>M**</sup>
Condom use at last intercourse <sup>a</sup>	3.3	1.7 <sup>M**</sup>
Contraceptive methods at last intercourse <sup>a</sup>	3.3	1.7 <sup>M**</sup>
Pregnancy involvement <sup>a</sup>	3.4	1.9 <sup>M**</sup>
STI diagnosis history <sup>a</sup>	3.5	1.9 <sup>M**</sup>
Ever been forced to have sexual intercourse	2.6	1.1 <sup>M***</sup>
<b>Other health and risk-related questions</b>		
Ever had a drink of alcohol	1.2 <sup>M</sup>	0.5 <sup>M*</sup>
Ever used marijuana	1.9 <sup>M</sup>	1.0 <sup>M*</sup>
Ever tried cigarette smoking	1.3 <sup>M</sup>	0.9 <sup>M</sup>
Vomit on purpose after eating	1.9	1.2 <sup>M</sup>
Suicidal ideation, past 12 months	1.8	1.5 <sup>M</sup>
Suicide attempt, past 12 months	2.2	1.7 <sup>M</sup>
Carried a weapon at school, past 30 days	3.3	2.1 <sup>*</sup>
Physical fight, past 12 months	3.1	2.0

<sup>a</sup> Questions asked to students who had ever had sexual intercourse (students who have never had sexual intercourse were asked to skip these questions, but counted here as valid responses)

<sup>M</sup> Should be interpreted with caution due to high levels of error

\*  $p < 0.05$ . \*\*  $p < 0.01$ . \*\*\*  $p < 0.001$ .



**Table 2.2. Percentages of Students who Did Not Respond to Any Sex- or Substance-related Questions Among East Asian Students**

	(weighted N)	Boys (22,601)	Girls (25,507)
Sexual behaviors (13 items)	1.6 <sup>M</sup>	[1.1, 2.3]	0.5 <sup>M</sup> *** [0.3, 0.8]
Alcohol consumption (9 items)	1.0 <sup>M</sup>	[0.7, 1.5]	0.5 <sup>M</sup> * [0.2, 0.9]
Marijuana use (4 items)	1.7 <sup>M</sup>	[1.2, 2.5]	0.9 <sup>M</sup> * [0.6, 1.4]
Cigarette smoking (4 items)	1.2 <sup>M</sup>	[0.8, 1.8]	0.9 <sup>M</sup> [0.6, 1.4]
Drug (other than marijuana) use (11 items)	2.4	[1.8, 3.2]	1.8 <sup>M</sup> [1.3, 2.6]

<sup>M</sup> Should be interpreted with caution due to high levels of error

\*  $p < 0.05$ . \*\*\*  $p < 0.001$ .

## **Chapter 3. Project One: Sexual Health and Risk Behavior Among East Asian Adolescents in Canada**

### **Introduction**

A critical developmental task of adolescence is to learn about healthy sexual relationships and practices. Sexual exploration and experimentation are commonly recognized as part of adolescence (Amaro, Navarro, Conron, & Raj, 2002; Gowen, Feldman, Diaz, & Yisrael, 2004; Jeltova, Fish, & Revenson, 2005). Participation in sexual intercourse has become common among late teens. Nearly half of adolescents in grades 9 to 12 in North America reported that they had engaged in sexual intercourse (Boyce et al., 2006; Centers for Disease Control and Prevention, 2010; Saewyc, Taylor, Homma, & Ogilvie, 2008). Although many sexually active adolescents engage in safe sexual practices, the initiation of sexual intercourse may put some adolescents at greater risk of health problems. For example, between 30% and 40% of sexually active teens in Canada reported that they or their partner did not use a condom at last intercourse (Smith et al., 2009) and they had had at least three sexual partners (Boyce et al., 2006; Saewyc et al., 2008). These sexual behaviors increase the risk of acquiring a sexually transmitted infection (STI) including human immunodeficiency virus (HIV), and experiencing unintended pregnancy.

The percentage of sexually active teens living in North America is lower among Asians than among other ethnic groups (Grunbaum, Lowry, Kann, & Pateman, 2000; Kuo & St Lawrence, 2006; Lowry, Eaton, Brener, & Kann, 2011; Poon & Franz, 2000; Sasaki & Kameoka, 2008; Spence & Brewster, 2010). The proportions of adolescents who reported having had sexual intercourse were nearly 12% of East Asian (i.e., Chinese, Korean, and Japanese) students in grades 7 to 12 in the 2003 British Columbia Adolescent Health Survey (Homma & Saewyc, 2008), and about 20% of Japanese American adolescents in grades 9 to 12 in the 2003 Hawaii

Youth Risk Behavior Survey (Sasaki & Kameoka, 2008). Nevertheless, among sexually active adolescents, the prevalence of risky sexual behaviors among Asian teens did not differ from that of their peers (Grunbaum et al., 2000; Hou & Basen-Engquist, 1997; Lowry et al.; Poon & Franz, 2000). The stereotypical view of Asians as a “model minority” (Uba, 1994) may result in sexual health risk among Asian adolescents being overlooked.

“Asians” in North America consist of diverse and heterogeneous groups who differ in language, religion, home country, immigration experience, and socioeconomic status. The prevalence of teen sexual activity may vary across these subgroups. It is particularly important to take into account the possible influence of culture in analyses of adolescents of Asian descent. Higher rates of sexual activity among Asian adolescents were associated with greater exposure to North American culture, such as being born in the United States (US; Cochran, Mays, & Leung, 1991) and speaking English at home (Schuster, Bell, Nakajima, & Kanouse, 1998; Greenman & Xie, 2008). Using a combined measure of temporal and linguistic exposure to host and original cultures, a secondary analysis of Asian American adolescents (41% Chinese, Korean, or Japanese, 21% Filipino) in a US national longitudinal study showed that compared with foreign-born Asian girls speaking a language other than English at home, both their US-born English-speaking peers and foreign-born English-speaking peers were more than four times more likely to have ever had sexual intercourse (Hahm, Lahiff, & Barreto, 2006). No difference was found for US-born Asian American girls who did not speak English at home. On the contrary, in another secondary analysis of the US longitudinal survey, also used by Hahm and colleagues (2006) and Greenman and Xie (2008), Kao and colleagues (Kao, Loveland-Cherry, Guthrie, & Caldwell, 2011) found that among Asian Americans and Pacific Islanders (52% Filipino, 36% Chinese, Korean, or Japanese), adolescents who spoke English at home or lived longer in the US had first intercourse at an older age when mother-adolescent

interactions and maternal attitudes about teen sex were taken into account.

Asian teen sexual activity, therefore, may be influenced by acculturation, broadly defined as the process of adaptation to new cultural environments by acquiring the norms, values, and behaviors of the host culture (Hahm et al., 2006). Individuals who spent more time in North America are assumed to be more acculturated. Their behaviors may be more influenced by Western norms. On the other hand, those who speak a language other than English, presumably a language of their heritage culture, may have more potential to retain elements of their original culture. They thus may hold the more conservative norms toward teen sexuality shared in many Asian cultures, possibly resulting in delayed sexual initiation. Both “time spent in North American” and “speaking a language other than English” have been widely used as proxy measures of acculturation. Although these proxy measures are subject to criticism because of their lack of ability to capture the complex phenomenon of acculturation and the unidirectional assumption of earlier acculturation models (Abraido-Lanza, Armbrister, Florez, & Aguirre, 2006; Hunt, Schneider, & Comer, 2004; Zambrana & Carter-Pokras, 2009), they have identified within-ethnic group differences.

Ethnocultural differences may also be observed in contraceptive behavior. Oral contraceptives, for instance, are most widely used in Western countries (Fisher, Boroditsky, & Bridges, 1999; Mosher & Jones, 2010; Skouby, 2004). Their popularity is low in East Asian countries, due in part to male-dominated gender relations, social norms against premarital sexual activity, and misconceptions about oral contraceptives (Lee, Jezewski, Wu, & Carvallo, 2011). Condoms are the most popular contraceptive method among East Asian women (Sato & Iwasawa, 2006). Some researchers have found an association between acculturation and oral contraceptives. Years of stay in the US were related to increased oral contraceptive use among Asian American adult women (Ursin et al., 1999). A lower level of acculturation was associated

with negative beliefs about oral contraceptive pills among Latino women (Venkat et al., 2008). A study of Korean immigrant women in the US showed that more acculturated women held more favorable attitudes toward oral contraceptives (Lee et al., 2011). No research, to my knowledge, has explored the effect of acculturation on contraceptive use among Asian adolescents.

Previous studies on teen sexual health have focused on adolescents who initiated sexual intercourse. The majority of adolescents, however, have never had sexual intercourse. What protects them from sexual initiation? A few studies asked adolescents to select among reasons for refraining from sexual activity. Teens often cite not being ready to have sex and waiting to meet the right person as reasons (Boyce et al., 2006; Smith et al., 2009). Other common reasons are fear of pregnancy or STIs and perceived family disapproval (Minnesota Student Survey Interagency Team, 2007; Smith et al., 2009). Girls are more likely than boys to endorse most reasons for sexual abstinence (Minnesota Student Survey Interagency Team., 2007; Smith et al., 2009), but more boys than girls cite lack of opportunity as a reason (Boyce et al., 2006; Smith et al., 2009). This information can help us understand adolescents' attitudes toward sexual activity.

In spite of continuing efforts to document and monitor the prevalence of adolescent sexual activity, few studies have targeted Asian teens residing in Canada (e.g., Homma & Saewyc, 2008; Poon & Franz, 2000). Those Canadian studies used data collected more than five years ago; we thus need to update information on the current Asian teen population. The purpose of this study was to document the prevalence of sexual behavior and reasons for abstaining from sexual intercourse among East Asian adolescents in British Columbia (BC). I focused particularly on adolescents of East Asian origin because: a) East Asians account for half of the "visible minority" youth population in BC (Statistics Canada, 2008c), and b) they share common cultural or philosophical backgrounds and similar immigration histories (Jang, 2002;

Yoon & Cheng, 2005). Additionally, the current study compared the prevalence of sexual activity among East Asian adolescents varying in degree of cultural exposure.

## **Methods**

### **Sample**

This study was a secondary analysis of adolescents of East Asian heritage in the 2008 British Columbia Adolescent Health Survey (BC AHS). In BC, more than half of East Asian youth are first-generation immigrants (Statistics Canada, 2008d). Data from BC allowed us to explore the heterogeneity of this group, making sexual health promotion strategies more culturally appropriate. The BC AHS is a cross-sectional, province-wide survey of students in grades 7 to 12 that has been conducted every five to six years since 1992 (Saewyc & Green, 2009; Smith et al., 2009). This paper-and-pencil anonymous survey was designed to gather information on physical and psychosocial health, and various factors that promote or compromise healthy adolescent development.

The sampling frame for the 2008 BC AHS included all students in grades 7 through 12 who were enrolled in regular public schools across the province during the 2007 to 2008 school year. The frame was first stratified by health service delivery area and grade. Classrooms were then randomly selected from among those in school districts that had agreed to participate in the survey. Oversampling was done for classes in school districts that required signed parental consent as opposed to parental notification and student consent. Consequently, approximately 44,000 students from 1,760 different classrooms in 50 of 59 school districts were selected for the 2008 BC AHS sample. Of this target sample, 29,315 students provided usable data, with an overall response rate of 66%. Each respondent was assigned sampling weights to adjust for unequal probabilities of selection and differential response rates, and to provide a provincial representation of all regular public students throughout BC. More details about the design and

procedures of the BC AHS are available elsewhere (Saewyc & Green, 2009).

The sample of this study included any student who selected “East Asian (e.g., Chinese, Japanese, Korean, etc.)” in the response to the question, “What is your cultural or ethnic background?” Of 4,311 students (18% of the entire BC AHS sample), who identified themselves as East Asian, 53% were girls. These students represent more than 48,000 students of East Asian ethnicity enrolled in grades 7-12 in BC schools. As summarized in Table 3.1, the majority of the students selected only East Asian as their cultural or ethnic background. Over half of East Asian students reported that they had lived outside of Canada and that they spoke a language other than English at home most of the time.

**Table 3.1. Characteristics of East Asian Students Living in British Columbia**

	(weighted N)	Boys, % (22,601)	Girls, % (25,507)
Age (years)	12 or younger	8.3	8.4
	13	16.1	14.5
	14	16.2	16.1
	15	14.9	17.4
	16	18.1	17.6
	17	16.0	15.8
	18 or older	10.4	10.3
Ethnicity	East Asian only	85.8	81.9
Years of stay in Canada	< 2 years	8.9	9.7
	2 – 5 years	18.6	19.7
	6 – 10 years	14.9	12.9
	10+ years	15.4	13.5
	All my life	42.1	44.3
Frequency of speaking a language other than English at home	Never	14.1	14.2
	Sometimes	34.5	31.5
	Most of the time	51.4	54.3

## **Measures**

### **Oral sex and sexual intercourse**

Dichotomous or categorical variables were used to describe students' experiences of various sexual health and risk behaviors. Participants were asked whether or not they had ever had oral sex. The 2008 BC AHS also asked whether or not a student had ever had sexual intercourse. Students were considered sexually active if they endorsed this question or indicated participation in sexual intercourse elsewhere in the survey. Genders of lifetime sexual partners were assessed by using the following questions: "During your life, with how many different male partners have you had sexual intercourse?" and "During your life, with how many different female partners have you had sexual intercourse?" Responses were grouped into: a) opposite-gender only (e.g., male students who reported having no male partners and at least one female partner), b) same-gender only (e.g., female students who reported having no male partners and at least one female partner), and c) both-genders (i.e., students who reported having at least one male partner and at least one female partner).

### **Risky sexual behaviors among sexually active adolescents**

Early sexual initiation was defined as having first intercourse before the age of 14. The number of lifetime sexual partners was measured with the same two questions used to assess the gender(s) of sexual partners. The original response options were ordinal, with 0 males/females, 1 male/female, 2 males/females, and 3 or more males/females. The responses were dichotomized into: a) having one or two partner(s) and b) having three or more partners. The number of sexual partners during the past year was also originally an ordinal variable and dichotomized into having one partner versus having at least two partners. Respondents were asked whether or not they drank alcohol or used drugs before they had sexual intercourse the last time.



### **Condom use and contraceptive methods at last intercourse**

The 2008 BC AHS asked sexually active students to mark all methods that they or their partner used at last sexual intercourse to prevent pregnancy. The response options included a) no method was used, b) withdrawal, c) condoms, d) birth control pills, e) depo provera, f) the patch, g) the ring, h) diaphragm/contraceptive sponge, i) IUD, j) emergency contraception, k) some other method, and l) not sure. Sexually active students were also asked whether or not they or their partner used a condom or other latex barrier at last intercourse. Responses were categorized as using a condom if a respondent marked “yes” in this question or cited condoms as a method used at last intercourse to prevent pregnancy.

### **Sexual health outcomes among sexually active adolescents**

Pregnancy involvement was measured by one question, “How many times have you been pregnant or gotten someone pregnant?” Responses were dichotomized into yes (one or more times) or no (0 times or not sure). A self-reported history of STI diagnosis was assessed by using the question, “Have you been told by a doctor or nurse that you had a sexually transmitted infection such as genital herpes, genital warts, chlamydia, syphilis, gonorrhea, hepatitis B, AIDS or HIV infection?”

### **Reasons for sexual abstinence**

For those who were not sexually active, the 2008 BC AHS included one question about reasons for not having sexual intercourse. Respondents could select one or more reasons from the following options: a) I don’t want to have sexual intercourse, b) I’m not ready, c) Someone in my family would disapprove, d) Some of my friends would disapprove, e) Most students in my school don’t have sexual intercourse, f) My friends don’t have sexual intercourse, g) Because of my religious or spiritual beliefs, h) I don’t want to get a sexually transmitted infection, i) I don’t want to get pregnant/cause a pregnancy, j) No one has asked me to/haven’t

had the chance, k) I'm waiting until I meet the right person, and l) I'm waiting until I get married.

### **Cultural exposure**

To determine if the prevalence of sexual activity differed among adolescents who varied in degree of exposure to Canadian or East Asian cultures, students were divided into four groups based on their responses to the following questions: "How long have you lived in Canada?" and "How often do you speak a language other than English at home?" Students were regarded as Canadian-born if they indicated having lived in Canada all their life. Other students were referred to as immigrants, although some students in this group may have been born in Canada or have obtained Canadian citizenship at birth. Each student in both the Canadian-born and immigrant groups was then categorized into either a) speaking a language other than English at home most of the time or b) speaking a language other than English at home never or sometimes. For the purpose of convenience, the former was referred to as speaking a heritage language at home, and the latter as speaking English at home. The vast majority (95.4%) of students who spoke a language other than English at home most of the time were single-ethnic East Asians; thus, this was used as a proxy measure of exposure to East Asian cultures. Consequently, four groups of East Asian adolescents were created: a) immigrants speaking a heritage language at home, b) immigrants speaking English at home, c) Canadian-born speaking a heritage language at home, and d) Canadian-born speaking English at home.

### **Analysis**

All analyses were stratified by gender, and conducted using SPSS Complex Samples version 18.0 to adjust for complex sampling designs and weighted data. Descriptive analyses included frequency of sexual behaviors and reasons for sexual abstinence, with their 95% confidence intervals. Chi-square tests were used to examine differences in prevalence estimates

between genders and among adolescents varying in degrees of cultural exposure. I also assessed the association between sexual behaviors (oral sex, sexual intercourse, condom use, and birth control pill use) and cultural exposure by using logistic regressions controlling for age.

To ensure the quality of these estimates, I determined the releasability of the results based on the coefficient of variation (CV), computed by SPSS, which is used by Statistics Canada (e.g., Statistics Canada, 2007). Following the guidelines used by Statistics Canada, the quality level of the estimate was considered acceptable when the CV was less than or equal to 16.5%. The CV in the range of 16.6% and 33.3% indicated a marginal level of acceptability (i.e., a high level of sampling error); thus caution should be exercised when interpreting the data. Data were too unreliable to be released when the CV exceeded 33.3%.

## **Results**

### **Sexual Behaviors, by Gender**

A low percentage of East Asian adolescents had ever engaged in sexual activity (Table 3.2). About one in ten boys and girls reported having had oral sex. Engaging in sexual intercourse was also uncommon, with less than 10% of boys and girls reporting having done so. Of all East Asian students, 3.7% of boys and 3.5% of girls reported that they had ever engaged in oral sex but never had sexual intercourse. Thus, about 13% of students may have been exposed to risk of STI/HIV acquisition. Of teens who had sexual intercourse, the majority reported only heterosexual intercourse. Small proportions of sexually active teens reported having only same-gender sexual partners or partners of both genders.

Some sexually active East Asian teens had engaged in sexual behaviors that increase the risk of STIs or unintended pregnancy. Sexual initiation before the age of 14 was reported by 17 - 19% of sexually active adolescents (Table 3.2). Among those who had ever had sexual intercourse, approximately 30% reported three or more sexual partners in their life. Likewise,

41% of boys and 36% of girls had had sexual intercourse with multiple partners during the past year. About one in four sexually active adolescents reported drinking alcohol or using drugs before they had sexual intercourse the last time.

To protect themselves from STIs or unwanted pregnancy, some adolescents used condoms or other contraceptive measures. Among those who had ever had sexual intercourse, girls were less likely than boys to report condom use at last intercourse (Table 3.2). Nearly 30% of sexually active teens reported using birth control pills. Of these sexually active students who used birth control pills, 36.3% of boys and 52.9% of girls reported that they did not use a condom at last intercourse. About 20% of sexually active boys and 30% of sexually active girls did not use either a condom or birth control pills. While more than half of students used these reliable methods, about one in five boys and one in four girls relied on withdrawal. Nearly 7% of sexually active teens indicated the use of emergency pills, which implied a failure or complete lack of contraceptive measures. Between 8% and 9% of students reported that no method was used to prevent pregnancy. Although the 2008 BC AHS asked about other contraceptive measures (e.g., depo provera, the ring), the number of students who reported using these methods was so small that stable estimates could not be computed.

A small proportion of sexually active East Asian adolescents reported pregnancy involvement or a history of STI diagnosis. About 7% of boys reported having gotten someone pregnant; about 9% of girls reported having ever been pregnant. STI diagnosis history was reported by 7% of boys and 5% of girls.

As described above, sexual activity was not prevalent among East Asian adolescents. However, among those who initiated sexual intercourse, the prevalence of risky sexual behaviors was high. Nearly 70% of sexually active boys and three in four (74%) sexually active girls reported that they had ever engaged in one or more risky sexual behaviors, including: a)

sexual debut before the age of 14, b) having at least three lifetime sexual partners, c) having at least two sexual partners in the past year, d) substance use before last intercourse, e) not using a condom at last intercourse, and f) pregnancy involvement.

**Table 3.2. Prevalence Estimates of Sexual Behaviors by Gender**

	Boys, % (22,601)	Girls % (25,507)
Ever had oral sex	11.0 [9.7, 12.5]	11.8 [10.3, 13.4]
Ever had sexual intercourse	9.1 [7.8, 10.6]	9.7 [8.4, 11.3]
Ever had oral sex only (never had intercourse)	3.7 [2.9, 4.7]	3.5 [2.7, 4.5]
<b>Among those who had ever had sexual intercourse (weighted N)</b>	<b>(2,001)</b>	<b>(2,441)</b>
Gender of sexual partners, lifetime		
Same-gender only or both-genders	9.7 <sup>M</sup> [6.4, 14.5]	11.2 <sup>M</sup> [7.7, 16.0]
Early sexual initiation, < 14 years	18.5 [13.9, 24.2]	16.8 [12.6, 22.0]
3+ sexual partners, lifetime	30.5 [24.4, 37.4]	26.6 [21.0, 32.9]
2+ sexual partners, past year	41.1 [34.0, 48.5]	36.0 [29.7, 42.9]
Substance use before last intercourse	22.8 [17.7, 28.7]	24.1 [18.8, 30.4]
Condom use at last intercourse <sup>1</sup>	67.4 [59.6, 74.3]	52.8 [45.7, 59.7]**
Contraception methods used at last intercourse		
Birth control pills <sup>1</sup>	28.9 [22.0, 37.0]	29.4 [23.4, 36.2]
Emergency contraception <sup>1</sup>	6.7 <sup>M</sup> [3.5, 12.5]	6.8 <sup>M</sup> [3.9, 11.8]
Withdrawal <sup>1</sup>	19.6 [14.3, 26.3]	25.3 [19.7, 31.8]
No method was used	8.4 <sup>M</sup> [5.5, 12.8]	9.3 <sup>M</sup> [6.0, 14.0]
Dual contraceptive use		
Neither condoms or birth control pills	22.4 [16.9, 29.0]	31.7 [25.0, 39.2]
Used condoms, not birth control pills	48.7 [40.5, 57.0]	38.9 [32.4, 45.9]
Used birth control pills, not condoms	10.5 <sup>M</sup> [6.1, 17.5]	15.6 [11.3, 21.0]
Both condoms and birth control pills	18.4 [13.3, 25.0]	13.8 <sup>M</sup> [9.8, 19.2]
Pregnancy involvement	6.9 <sup>M</sup> [4.4, 10.5]	8.8 <sup>M</sup> [5.4, 14.0]
STI diagnosis history	6.6 <sup>M</sup> [4.1, 10.7]	4.8 <sup>M</sup> [2.8, 8.2]
1+ risky sexual behaviours <sup>2</sup>	69.5 [61.7, 76.4]	73.6 [66.4, 79.8]

Note. 95% confidence intervals are in brackets.

<sup>1</sup> May be used together with other methods

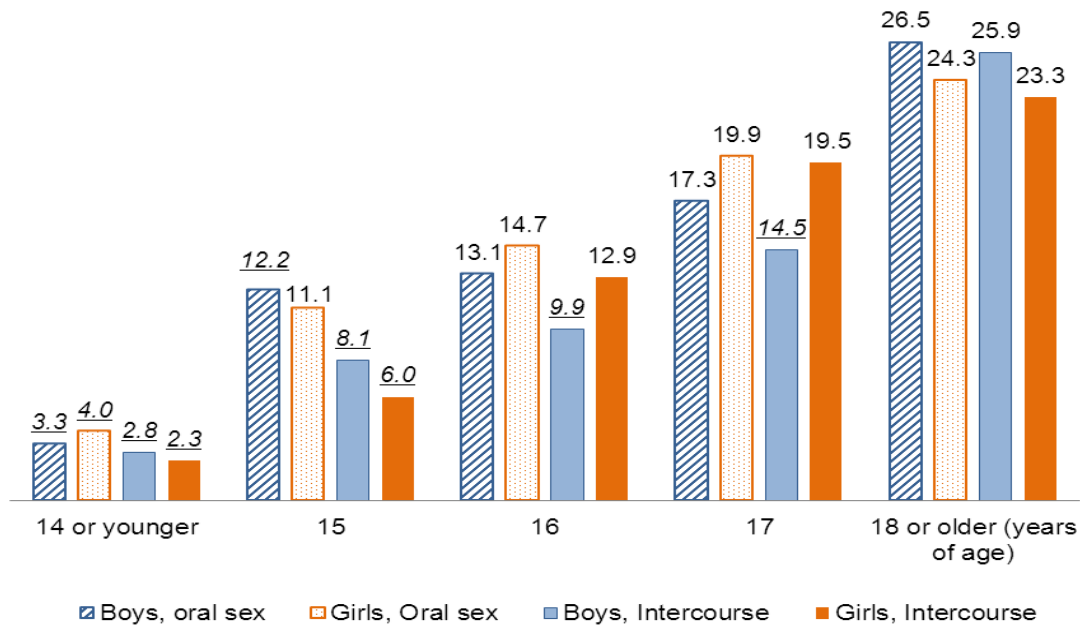
<sup>2</sup> Reported one or more behaviors such as 1) starting sexual intercourse before 14, 2) having 3+ sexual partners in life, 3) having 2+ sexual partners in past year, 4) using alcohol or drugs before last intercourse, 5) not using a condom at last intercourse, and 6) having ever been pregnant or gotten someone pregnant

<sup>M</sup> Should be interpreted with caution due to high levels of error

\*\*  $p < 0.01$ .

### **Sexual Behaviors, by Age**

Adolescent sexual activity becomes more common with increased age; thus, prevalence rates among an entire sample may not adequately reflect those of younger adolescents and older adolescents. As shown in Figure 3.1, older East Asian teens were more likely than their younger peers to report having had oral sex. Between 3% and 4% of boys and girls aged 14 or younger reported having done so compared with more than 20% of adolescents aged 18 or older. Similarly, about 2 - 3% of boys and girls aged 14 or younger reported having had sexual intercourse compared with 26% of boys and 23% of girls among adolescents aged 18 or older. Percentages of oral sex and sexual intercourse among both genders gradually increased with age. In particular, significant increases were found in the prevalence of oral sex between ages 14 and 15 among boys, sexual intercourse between ages 17 and 18 among boys, and sexual intercourse between ages 15 and 16 among girls. There was no significant gender difference within the same age group.



**Figure 3.1. Percentages of Students Who Had Ever Had Oral Sex and Sexual Intercourse by Gender and Age**

*Note.* Numbers in underlined italics should be interpreted with caution due to high levels of error  
 Weighted n's for boys: 14 or younger (9,188), 15 years old (3,370), 16 years old (4,084), 17 years old (3,614), 18 or older (2,344)  
 Weighted n's for girls: 14 or younger (9,915), 15 years old (4,445), 16 years old (4,481), 17 years old (4,032), 18 or older (2,634)

### Reasons for Sexual Abstinence

The vast majority of East Asian adolescents had never had sexual intercourse. The 2008 AHS asked those students about their reasons for not having sexual intercourse, and students could choose one or more options from 12 possible reasons. Overall, girls were more likely than boys to endorse most reasons, with some exceptions (Table 3.3). “Nobody has asked me to/I haven’t had the chance” was cited as a reason for abstinence more frequently by boys than by girls. “Most students in my school don’t have sex” and “I’m waiting to meet the right person” were not different by gender.

**Table 3.3. Reasons for Sexual Abstinence Among Non-sexually Active Adolescents by Gender**

(weighted N)	Boys, % (18,811)	Girls, % (21,878)
I don't want to have sex	18.7 [16.8, 20.8]	43.7 [41.4, 45.9]***
Not ready	42.3 [39.7, 45.0]	62.2 [59.6, 64.7]***
Family would disapprove	29.3 [26.9, 31.9]	45.4 [42.9, 47.9]***
Friends would disapprove	13.0 [11.3, 15.0]	28.8 [26.7, 31.0] ***
Most students don't have sex	15.3 [13.6, 17.3]	13.4 [11.8, 15.1]
Friends don't have sex	15.7 [13.9, 17.6]	21.0 [19.1, 23.0] ***
Religious/spiritual beliefs	9.0 [7.5, 10.7]	15.1 [13.3, 17.1] ***
To avoid an STI	29.2 [26.7, 31.8]	44.5 [42.1, 47.0] ***
To avoid pregnancy	22.4 [20.2, 24.7]	53.3 [50.8, 55.9] ***
Nobody has asked me to	30.7 [28.5, 33.0]	19.3 [17.5, 21.1] ***
Waiting to meet the right person	51.4 [48.7, 54.1]	53.4 [50.5, 56.2]
Waiting until marriage	31.0 [28.5, 33.6]	43.4 [41.0, 45.9] ***

*Note.* 95% confidence intervals are in brackets. Students could choose one or more options  
\*\*\*  $p < 0.001$ .

For both boys and girls who had never had sexual intercourse, “I’m not ready” and “I’m waiting to meet the right person” were two of the most common reasons. Male adolescents endorsed “I don’t want to get an STI” more frequently than “I don’t want to get pregnant/cause pregnancy”. On the other hand, among girls, fear of pregnancy was more frequently cited than fear of an STI.

### **Sexual Behaviors and Reasons for Sexual Abstinence, by Cultural Exposure**

#### **Sexual behaviors**

The prevalence of oral sex and sexual intercourse appeared to differ by years of residence in Canada and primary language spoken at home. For instance, 8.9% of East Asian immigrant boys who spoke a heritage language at home reported having had oral sex compared with 14.2% of Canadian-born East Asian boys speaking English at home. Percentages of students who reported experience with oral sex were 10.1% and 11.3%, respectively, for



Canadian-born boys speaking a heritage language at home and immigrant boys speaking English at home. Less than 10% of boys whose primary home language was not English reported having had sexual intercourse (8.0% for immigrant boys and 7.4% Canadian-born boys); more than one in ten boys speaking English at home reported having done so (10.8% for immigrant boys and 10.2% Canadian-born boys). Among East Asian girls, 7.5% of Canadian-born girls who spoke a heritage language at home reported ever having oral sex compared with 15.4% of their English-speaking counterparts. Among immigrant girls, 10.1% of those speaking a heritage language at home and 12.7% of those speaking English at home reported lifetime oral sex. The percentages who reported having had sexual intercourse were 8.5% and 5.1%, respectively, for immigrant girls and Canadian-born girls whose primary home language was not English, compared with 10.5% and 12.9%, respectively for immigrant girls and Canadian-born girls whose primary home language was English.

Because of the increased prevalence of sexual activity with increased age, logistic regressions controlling for age were conducted. Compared with immigrant boys who spoke a language other than English at home, the two groups of Canadian-born boys were more likely to report that they had ever had oral sex (Table 3.4). Immigrant boys speaking English at home and Canadian-born boys speaking English at home were more likely than immigrant boys speaking a heritage language at home to report having had sexual intercourse. Compared with immigrant girls who spoke a heritage language at home, Canadian-born girls speaking English at home were more than twice as likely to report having had oral sex and having had sexual intercourse (Table 3.4). Likewise, immigrant girls speaking English at home had higher odds of having had oral sex and having had sexual intercourse than immigrant girls whose primary home language was not English. The two groups of girls speaking a heritage language at home did not significantly differ in the prevalence of oral sex and sexual intercourse.

**Table 3.4. Age-adjusted Odds Ratios for Oral Sex and Sexual Intercourse, by Cultural Exposure**

Primary language at home	Immigrants			Canadian-born		
	Heritage	English		Heritage	English	
<b>Boys</b>						
(weighted N)	(8,989)	(4,050)		(2,594)	(6,870)	
Ever had oral sex	1.00	1.54 [0.98, 2.42]	1.79*	[1.02, 3.14]	2.36***	[1.64, 3.39]
Ever had sexual intercourse	1.00	1.65* [1.03, 2.62]	1.43	[0.77, 2.65]	1.82**	[1.20, 2.76]
<b>Girls</b>						
(weighted N)	(10,368)	(3,761)		(3,441)	(7,835)	
Ever had oral sex	1.00	1.66* [1.06, 2.60]	1.11	[0.61, 2.01]	2.34***	[1.58, 3.47]
Ever had sexual intercourse	1.00	1.73* [1.07, 2.79]	0.98	[0.48, 1.99]	2.58***	[1.71, 3.88]

Note. 95% confidence intervals are in brackets.

\*  $p < 0.05$ . \*\*  $p < 0.01$ . \*\*\*  $p < 0.001$ .

### Contraceptive use

The low prevalence of having had sexual intercourse prevented us from comparing contraceptive use among sexually active youth by the four categories of cultural exposure. Instead, two separate measures of cultural exposure (temporal and linguistic) were used. As shown in Table 3.5, condom use at last intercourse did not differ by either years of stay in Canada or primary home language among either gender. Birth control pill use at last intercourse was associated with neither temporal or linguistic exposure among sexually active boys. Canadian-born sexually active girls were more likely than their immigrant peers to report that they had used birth control pills at last intercourse. Speaking a heritage language at home was associated with lower odds of using birth control pills.

**Table 3.5. Age-adjusted Odds Ratios for Contraceptive Use at Last Intercourse Among Sexually Active Students, by Cultural Exposure**

	Condoms		Birth control pills	
<b>Boys</b>				
Canadian-born <sup>a</sup>	1.08	[0.53, 2.21]	1.41	[0.74, 2.72]
Speak a heritage language at home <sup>b</sup>	1.02	[0.55, 1.92]	1.09	[0.54, 2.22]
<b>Girls</b>				
Canadian-born <sup>a</sup>	1.11	[0.63, 1.98]	2.00*	[1.08, 3.73]
Speak a heritage language at home <sup>b</sup>	1.00	[0.54, 1.85]	0.37**	[0.18, 0.77]

*Note.* 95% confidence intervals are in brackets.

<sup>a</sup>Referent: immigrants

<sup>b</sup>Referent: speak a heritage language at home

\*  $p < 0.05$ . \*\*  $p < 0.01$ .

### Reasons for sexual abstinence

Among East Asian boys who have never had sexual intercourse, there were some significant differences in the frequency with which students endorsed reasons for sexual abstinence by years of stay in Canada and primary home language (Table 3.6). A higher percentage of Canadian-born boys speaking a heritage language at home, compared with their immigrant counterparts, endorsed “Someone in my family would disapprove”, “Some of my friends would disapprove”, “Most students in my school don’t have sexual intercourse”, and “My friends don’t have sexual intercourse”. Canadian-born boys who spoke English at home were more likely than immigrant boys speaking a language other than English at home to endorse “Most students in my school don’t have sexual intercourse”.

**Table 3.6. Reasons for Sexual Abstinence Among Non-sexually Active East Asian Adolescents by Cultural Exposure (Percentage and 95% Confidence Intervals)**

Primary language at home	Immigrants		Canadian-born		
	Heritage	English	Heritage	English	
<b>Boys</b> (weighted N)	(7,571)	(3,264)	(2,191)	(5,512)	
Family would disapprove	26.9 [23.0, 31.1]	26.2 [21.3, 31.6]	37.5 [30.3, 45.4]	33.0 [28.3, 38.2]	*
Friends would disapprove	10.0 [7.8, 12.7]	13.9 [10.2, 18.7]	19.8 [14.2, 26.9]	15.0 [11.5, 19.3]	**
Most students don't have sex	11.7 [9.3, 14.7]	13.1 [9.6, 17.8]	22.1 [16.3, 29.3]	20.1 [16.5, 24.2]	***
Friends don't have sex	12.7 [10.2, 15.8]	16.5 [12.5, 21.4]	23.2 [17.0, 30.8]	16.9 [13.6, 20.9]	*
<b>Girls</b> (weighted N)	(8,912)	(3,074)	(3,081)	(6,457)	
Not ready	58.9 [54.6, 63.0]	61.3 [54.6, 67.6]	67.6 [60.9, 73.7]	67.7 [63.4, 71.7]	*
Family would disapprove	42.2 [38.4, 46.1]	45.7 [39.3, 62.2]	56.3 [49.2, 63.2]	47.0 [42.7, 51.4]	**
Friends would disapprove	23.5 [20.6, 26.6]	27.6 [22.1, 33.9]	37.8 [31.4, 44.6]	34.1 [30.2, 38.3]	***
To avoid an STI	38.2 [34.4, 42.1]	42.0 [36.1, 48.2]	53.6 [46.8, 60.2]	52.8 [48.4, 57.1]	***
To avoid pregnancy	48.3 [44.3, 52.4]	49.1 [42.6, 55.7]	63.6 [56.0, 70.6]	60.6 [56.1, 64.9]	***
Nobody has asked me to	17.0 [14.4, 19.9]	16.9 [12.8, 21.9]	21.3 [16.4, 27.1]	23.6 [20.2, 27.4]	*
Waiting to meet the right person	49.5 [45.6, 53.4]	49.1 [42.2, 56.1]	57.5 [50.9, 63.9]	62.0 [57.4, 66.4]	***
Waiting until marriage	47.6 [43.5, 51.7]	40.4 [34.4, 46.7]	50.4 [43.9, 56.9]	38.2 [34.0, 42.5]	**

*Note.* 95% confidence intervals are in brackets. Students could choose one or more options. Only statistically significant results are presented.

\*  $p < 0.05$ . \*\* $p < 0.01$ . \*\*\* $p < 0.001$ .

Compared with non-sexually active immigrant girls whose primary language at home was not English, their Canadian-born peers speaking a heritage language at home were more likely to cite perceived family disapproval, perceived peer disapproval, fear of an STI, and fear of pregnancy. Likewise, Canadian-born girls who spoke English at home were more likely to endorse lack of readiness, perceived peer disapproval, fear of an STI, fear of pregnancy, a lack of opportunity, and waiting to meet the right person. Waiting until marriage was cited less

frequently by Canadian-born girls speaking English at home than by heritage-language speaking immigrants and Canadian-born girls. About 60% of Canadian-born girls who spoke English at home endorsed fear of pregnancy and waiting to meet the right person compared with less than half of immigrant girls speaking English at home. These findings are presented in Table 3.6.

### **Discussion**

This is one of few studies to document the prevalence of sexual activity among adolescents of Asian descent in North America and reasons for refraining from sexual intercourse among non-sexually active adolescents. The use of data from a province-wide survey including a large number of East Asian participants provided stable prevalence estimates in BC and allowed us to examine the heterogeneity within this group. I found that prevalence of sexual behavior, including contraceptive practice, and reasons for abstinence differed by cultural exposure.

Among BC adolescents of East Asian heritage in grades 7 to 12, the percentage of students who had ever had sexual intercourse was lower than 10%. This was lower than the provincial rate of 22% (Smith et al., 2009). The lower prevalence of sexual initiation among Asian teens in BC was consistent with previous study findings (Homma & Saewyc, 2008; Kuo & St Lawrence, 2006; O'Sullivan, Cheng, Harris, & Brooks-Gunn, 2007; Sasaki & Kameoka, 2008). Similarly, East Asian students had a lower rate of lifetime oral sex experience (about 11%) compared with the entire population of 7th to 12th graders (26%; Smith et al., 2009). A few studies have reported that Asian young people were less likely than other ethnic groups to engage in oral sex (Baldwin, Whiteley, & Baldwin, 1992; Kaiser Family Foundation, Hoff, Greene, & Davis, 2003; Schuster et al., 1998). In summary, Asian youth are more likely to delay sexual activity. However, it should be remembered that while the vast majority of East Asian teens reported postponing sexual involvement, approximately 70% of sexually active East Asian

teens reported having engaged in one or more types of risky sexual behaviors. Sexual initiation may place those adolescents at risk for exposure to STIs and HIV or unwanted pregnancy if they engage in risky sexual practice such as having multiple sexual partners and unprotected sex.

### **Gender Differences**

No gender differences were observed in frequency of sexual behaviors, with one exception: East Asian girls were less likely than East Asian boys to use a condom at last intercourse. The rate of condom use among East Asian girls was also lower than the overall female provincial rate of 61% (Smith et al., 2009). Asian young people in North America have been found to be less knowledgeable about STI/HIV transmission and protection than other ethnic groups (Franz & Poon, 2000; Kaiser Family Foundation et al., 2003; Meston, Trapnell, & Gorzalka, 1998) and less likely than Whites to have talked about HIV/AIDS with parents (Hou & Basen-Engquist, 1997). This lack of knowledge may contribute to the relatively low prevalence of consistent condom use among East Asian female students. However, knowledge acquisition is not sufficient to change condom use behavior. Condom use requires not only knowledge and awareness of STI/HIV and pregnancy but also accessibility, practice skills, negotiation abilities, and relationship power balances. For example, women who propose using a condom are more likely to be perceived to be promiscuous or less sexually active by East Asian men than by men of European descent (Conley, Collins, & Garcia, 2000). Traditional gender role expectations and cultural taboos about discussing sexual topics may put East Asian girls in a difficult position to persuade their male partners to use condoms.

While the prevalence of most sexual practices was similar between gender groups, boys and girls who are not sexually active may have different reasons for abstinence. Among East Asian students who have never had sexual intercourse, girls were more likely than boys to endorse most reasons for not having intercourse, which is consistent with other studies (Boyce

et al., 2006; Minnesota Student Survey Interagency Team, 2007; Smith et al., 2009). Despite the different endorsement rates, “not being ready to have sex,” “waiting to meet the right person,” and “waiting until marriage” were frequently cited by both boys and girls, as shown in past research (Boyce et al. 2006; Smith et al., 2009). Many East Asian students appear to decide against having sexual intercourse until they feel ready physically, emotionally, and socially.

### **Differences by Cultural Exposure**

The low rates of sexual activity among adolescents of East Asian descent may be explained by cultural expectations regarding sexual behavior (Hou & Basen-Engquist, 1997; Kuo & St Lawrence, 2006; Okazaki, 2002). In many Asian cultures, open discussion about sexual topics has been traditionally considered inappropriate (Chan, 1994). Sexual intercourse during adolescence or before marriage also has been viewed as unacceptable, bringing shame or dishonor to the family. The influence of sexual conservatism may also be inferred from our finding that compared with immigrants and Canadian-born students whose primary language at home was English, immigrants who spoke another language at home were less likely to engage in oral sex and sexual intercourse. Moreover, immigrant youth who speak a heritage language at home may be more likely to feel an association with their culture of origin than with Western culture, which is more liberal about sexual values. Linguistic cultural exposure may be more powerful in maintaining and influencing adolescents’ values about sexual behaviors than temporal exposure. Language is an essential tool for learning about culture; for those who speak a language other than English at home, this could indicate the maintenance of strong cultural connections to one’s family and ancestors. Phinney and colleagues (Phinney, Romero, Nava, & Huang, 2001) found that parental cultural maintenance had a positive effect on their adolescents’ ethnic language proficiency, which in turn was associated with higher levels of adolescents’ ethnic identity.

The current study findings were similar to those reported by Hahm et al. (2006) and Greenman and Xie (2008), but inconsistent with those of Kao et al. (2011). Although these three groups of researchers used the same US national survey data, their sample characteristics, measures of acculturation and sexual initiation, and analytical techniques were different. The current study bore a greater resemblance to Hahm et al. and Greenman and Xie than Kao et al. Particularly noteworthy is the difference in the ethnic distribution. East Asians accounted for 41% of subjects in Hahm and colleagues' study and 36% in Kao and colleagues' study. Over half (52%) of the sample in Kao et al. were Filipino compared to 21% in Hahm et al. Greenman and Xie analyzed the data separately for Chinese and Filipino respondents. In general, new immigrant youth from the Philippines have a higher English proficiency level than their peers of other Asian groups because English, one of two Filipino official languages, is used in education (Blair & Qian, 1998). Filipino adolescents are more likely than East Asian adolescents to communicate with their parents in English (Tseng & Fuligni, 2000). Greenman and Xie found a significant association between English use at home and earlier sexual onset among Chinese youth, but not among Filipino youth. Hence, English language use may not be an adequate measure of acculturation for Filipino youth. Acculturation processes and their effects on sexual behavior may differ between East Asians and Filipinos.

To my knowledge, the current study was the first attempt to investigate whether reasons for sexual abstinence varied across levels of cultural exposure. Canadian-born boys speaking a language other than English at home were more likely than their immigrant counterparts to list external influences for not having sex. One possible explanation is that perceived social isolation at school experienced by immigrant East Asian students, especially newcomers (Li, 2009), may be related to less frequent endorsement of peer influences as a reason for sexual abstinence. However, for girls, percentages of endorsing "most students don't have sex" and



“friends don’t have sex” did not differ by cultural exposure. Some researchers found that male adolescents were more likely than girls to report perceived peer pressure for sexual initiation (De Gaston, Weed, & Jensen, 1996; Nahom et al., 2001). Adolescents’ decisions about sexual abstinence may be influenced by the intersection of culture and gender.

Among East Asian girls who reported never having sexual intercourse, avoiding an STI and pregnancy was generally endorsed more frequently by Canadian-born students than by immigrant students. While it appears to be an important reason for abstinence for all four groups of girls, more Canadian-born girls were concerned about the risk of contracting an STI or getting pregnant. As shown in a study of young Asian women in Canada (Brotto, Chik, Ryder, Gorzalka, & Seal, 2005), those who had spent more years in Canada had more knowledge about sexual health. Canadian-born girls may thus be more aware of STIs and pregnancy risks than immigrant girls. STI or teen pregnancy prevention might be a less important reason for immigrant girls using a heritage language at home than for Canadian-born girls using English at home. Instead, they were more likely to endorse postponing sexual initiation until marriage. This reason was also endorsed more frequently by Canadian-born girls using a heritage language at home than by Canadian-born girls using English at home. Our finding implies that East Asian female teens who speak a heritage language at home may be likely to hold conservative sexual values.

### **Contraceptive Use**

Contraceptive use, particularly methods other than condoms, among Asian adolescents in North America has not been well-documented. In this study, birth control pills were the second most common method to prevent pregnancy, followed by withdrawal and emergency contraception. But this percentage (about 29%) was lower than the provincial average of 46% (Smith et al., 2009). A reason for the lower rate may be cultural. In qualitative studies with East

Asian women living in BC, the majority of whom were adults, many expressed fear or distrust of oral contraceptive use (Wiebe, Sent, Fong, & Chan, 2002; Wiebe, Janssen, Henderson, & Fung, 2004; Wiebe, Henderson, Choi, & Trouton, 2006). Besides fear of weight gain, infertility and being regarded as promiscuous were the main concerns about oral contraceptives, which were primarily mentioned by Chinese-speaking women (Wiebe et al., 2002). Overall, East Asian women tended to have negative beliefs and attitudes about birth control pills. Cultural influences on oral contraceptive use were also inferred in our study, as sexually active girls who were born in Canada or primarily spoke English at home were more likely to use oral contraceptives. Those girls with higher levels of exposure to Canadian culture may have more positive beliefs and attitudes toward birth control pills, as shown by previous studies with Asian American and Latino adult women (Lee et al., 2011; Ursin et al., 1999; Venkat et al., 2008). In addition, Canadian-born or English-speaking East Asian girls may be more likely than their immigrant or heritage-language speaking peers to have more acculturated mothers, which may increase accessibility to or familiarity with oral contraceptives. For healthcare providers who work with East Asian adolescents, it is important to understand potential cultural effects on attitudes and behavior related to contraceptive use. Furthermore, we should not neglect the fact that about one in four sexually active East Asian students reported that they did not use reliable methods to prevent pregnancy such as condoms and birth control pills. There may be difficulty getting access to sexual health information and services because of a cultural bias or linguistic barrier.

### **Limitations**

There are several limitations to this study. First, the BC AHS did not include adolescents who did not attend regular public schools. Students in ESL (English as a Second Language) programs also were not included in the survey. East Asian teens in ESL, who were likely to be new immigrants or international students, may have different rates of sexual

behavior. Second, as with any self-reported data concerning sensitive topics, some responses may have been inaccurate. Sexual experience was potentially under-reported given that teen sexual activity is generally considered inappropriate in East Asian cultures. Third, some estimates were marginal in the level of data accuracy, due in part to the small sample size of sexually active East Asian students.

Another limitation is the measure of exposure to Canadian or East Asian cultures. I used the length of time that students had spent in Canada and primary language spoken at home as a proxy measure. These variables may or may not reflect the actual degree of cultural exposure. For example, Canadian-born students using English at home who are very interested in their heritage cultures may talk with East Asians or read books in English to learn about these cultures. Additionally, this study did not take into account potential differences by country of origin. Prevalence rates of sexual experience may differ within the group “East Asian” students, which consisted of those of Chinese, Korean, and Japanese heritage. However, those differences may result from differences in generational status rather than country of origin. Some studies showed higher proportions of risky behaviors among Japanese American adolescents than Chinese American adolescents (Choi, 2008; Nagasawa, Qian, & Wong, 2001). When generational status was controlled for, however, there were no longer any differences between Chinese Americans, who were more likely to be immigrants or second generation, and Japanese Americans, most of whom were third- or higher generation.

## **Conclusions**

Among East Asian adolescents in grades 7 through 12 attending regular public schools in BC, prevalence of sexual intercourse and oral sex was very low. Particularly, students who reported speaking a language other than English at home most of the time had lower rates than those who did not. However, once East Asian students initiated sexual intercourse, many of

them engaged in unsafe sexual practices. Cultural influences were also indicated by a greater prevalence of oral contraceptive use among sexually active girls with higher levels of exposure to Canadian culture. Our findings support the need for sexual health education and services for East Asian adolescents. Safe sexual practices need to be an intervention focus. Sexual health promotion strategies may need to be tailored to gender and sociocultural contexts in which adolescents live. Although gender and culture appear to be key to understanding sexual health among East Asian teens in Canada, adolescent sexuality is too complex to be explained by only two factors. Future research should explore more factors that may influence sexual activity and decisions on abstinence among this population.

## **Chapter 4. Project Two: Psychometric Evaluation of the Multigroup Ethnic Identity**

### **Measure - Revised with East Asian Adolescents in Canada**

#### **Introduction**

Growing numbers of immigrants and ethnic minority people have promoted interest in health issues related to ethnicity. In the field of adolescent development, ethnic identity has been of interest to researchers, as identity formation is a critical developmental task during adolescence. Ethnic identity is a type of social identity that is part of a self-concept that derives from one's knowledge of and values and affections toward one's membership of social group(s) (Tajfel, 1981). It is thus defined as "one's sense of belonging to an ethnic group and the part of one's thinking, perception, feelings, and behavior that is due to ethnic group membership" (Rotheram & Phinney, 1988, p. 13). Social identity theory (Tajfel, 1981) posits that a sense of belonging and values attached to one's group are a source of psychological well-being. From a developmental perspective, identity is formed through exploring and experimenting alternative directions, values, and beliefs and making a commitment to one's choices (Marcia, 1980, 1994). Likewise, ethnic identity is developed through exploration of the meaning of one's ethnicity and one's commitment to the ethnic group (Phinney, 1992).

Identity development involves an interaction between individuals and their physical and social world (Liebkind, 2006); therefore, its developmental process and significance are not the same across adolescents. Ethnic identity formation is a challenging and complex task, particularly for ethnic minority adolescents who often encounter discrimination due to negative stereotypes associated with their ethnicity (Costigan, Su, & Hua, 2009; Umaña-Taylor, Diversi, & Fine, 2002). Social identity theory (Tajfel, 1981) suggests that stronger ethnic identity is an asset; it has been associated with better psychosocial functioning such as higher self-esteem, fewer depressive symptoms, and a lower level of anxiety (Costigan et al., 2009; Smith & Silva,

2010; Umaña-Taylor, 2011).

With increasing recognition of the importance of ethnic identity, particularly for immigrant and ethnic minority youth, the assessment of ethnic identity has become an issue. One of the most widely used scales of ethnic identity is the Multigroup Ethnic Identity Measure (MEIM; Phinney, 1992). The measure has been psychometrically tested with diverse populations, differing by age, ethnicity, and location. Recently, the MEIM-Revised (MEIM-R), a short version of the MEIM, was developed (Phinney & Ong, 2007), but has not yet been tested with adolescents. Thus, the purpose of this study was to evaluate the psychometric properties of scores on the MEIM-R among East Asian students in grades 7 through 12.

### **Measuring Ethnicity**

Ethnicity is a complex and abstract term so that there is no universally accepted definition (Clarke, Colantonio, Rhodes, & Escobar, 2008). However, the common elements of the definition involve a subjective belief in common descent and shared cultural characteristics such as beliefs, values, languages, religions, and customs (Clarke et al., 2008; Forbes, 2010; Morning, 2008). In measuring ethnicity, individuals are categorized based on ancestral origins or self-identification with specific cultural groups which they feel they belong to, which is part of ethnic identity (Clarke et al., 2008). Although categorization by ethnic origin appears to be more objective, there is no definite category of ethnicity due to its abstract definition. For instance, the list of ethnic groups differs between the Canadian and American census (Burton, Nandi, & Platt, 2010). Because of historic conflation between ethnicity and nationality and an increasingly diverse population, a number of self-reported options based on self-identification have been constructed. In general, there are four types of self-report options: a) heritage or national origin categories (e.g., Chinese, Mexican), b) panethnic categories (e.g., Asian, Latino), c) hyphenated categories such as heritage- or panethnic-country of residence/nationality (e.g.,

Japanese-Canadian, Asian-American), and d) country of residence/nationality only (e.g., Canadian) (Fuligni, Kiang, Witkow, & Baldelomar, 2008; Kiang, Perreira, & Fuligni, 2011). Because each study used different ethnic categories, categories in the following literature review were those used by the authors of the study.

## **Development of the MEIM**

### **The original MEIM**

The original intention to develop the MEIM was to assess ethnic identity across diverse ethnic groups (Phinney, 1992). Grounded in Tajfel's social identity theory (Tajfel, 1981) and Marcia's developmental perspective (Marcia, 1980, 1994), Phinney (1992) proposed a 20-item ethnic identity measure. Major components of ethnic identity common to all ethnic groups included *Affirmation and Belonging* (five items), *Ethnic Identity Achievement* (seven items), and *Ethnic Behaviors* (two items). The original MEIM also included six items assessing attitudes toward other groups (*Other-Group Orientation* [OGO]), which is not part of, but may interact with ethnic identity. As a result of an exploratory factor analysis (EFA), Phinney selected a two-factor solution for ethnically diverse students in the United States (US): One factor represented *Ethnic Identity* and the other was *OGO* (Table 4.1).

**Table 4.1. Summary of Factor Structures of the Multigroup Ethnic Identity Measure**

First author (year of publication)	Phinney <sup>a</sup> (1992)	Roberts (1999)	Phinney (2007)	Yoon (2011)	Spencer (2000)	Yancey (2001)	Pegg (2005)
Sample N	417	200	241	289	2,184	847	134
Country / Ethnicity	US/ diverse	US/ European, African, Mexican	US/ diverse	US/ European, minority	US/ diverse	US/ minority	US/ African
Mean age (range) or grade	M = 16.5 (14–19)	Grade 6–8	M = 19.7	M = 30.5 (European), 26.8 (minority)	M = 12.9 (11–15)	M = 14.5 (12–17)	M = 11.9 (11–14)
Items							
Spend time to learn	Achieve	Exp	Exp	Exp	Exp	Part	Exp
Active in ethnic organizations	Behav	Exp	—	—	Exp	Part	Exp
Clear sense of ethnic background	Achieve	Aff-Blg	—	—	Id / Exp	—	Aff-Blg
Think about group membership	Achieve	Exp	—	—	Exp	—	Exp
Happy to be member	Aff-Blg	Aff-Blg	—	—	Id	Aff-Blg	Aff-Blg
Not very clear about the role of ethnicity	Achieve	—	—	—	—	—	—
Not spend much time to learn	Achieve	—	—	—	Exp	—	—
Sense of belonging to group	Aff-Blg	Aff-Blg	Com	Com	Id	Aff-Blg	Aff-Blg
Understand group membership	Achieve	Aff-Blg	Com	Com	Id	Aff-Blg	Aff-Blg
Talk to others about group	Achieve	Exp	Exp	Exp	Exp	Part	Exp
Pride in ethnic group	Aff-Blg	Aff-Blg	—	—	Id	Aff-Blg	Aff-Blg
Participate in cultural practices	Behav	Exp	—	—	Exp	Part	Exp
Strong attachment to group	Aff-Blg	Aff-Blg	Com	Com	Id	Aff-Blg	Aff-Blg
Feel good about culture	Aff-Blg	Aff-Blg			Id	Aff-Blg	Aff-Blg
I have often done things that will help me understand my ethnic background better.	—	—	Exp	Exp	—	—	—

Note. US = United States, Achieve = Achievement, Behav = Behavior, Aff-Blg<sup>c</sup> = Affirmation and Belonging, Exp<sup>b</sup> = Exploration, Com<sup>c</sup> = Commitment, Id<sup>c</sup> = Identification, Part<sup>b</sup> = Participation

<sup>a</sup> including Other-Group Orientation (OGO) items. <sup>b</sup> Factors related to *Exploration*: <sup>c</sup> Factors related to *Commitment*  
The MEIM-R (the 2008 British Columbia Adolescent Health Survey version) items are shaded.



**Table 4.1. Summary of Factor Structures of the Multigroup Ethnic Identity Measure (cont'd)**

First author (year of publication)	Avery (2007)	Lee (2004)	Juang (2010)	Worrell (2007)	Dandy (2008)	Gazis (2010)	Gaines (2010)
Sample N	1,349	323	127	196	485	274	236
Country / Ethnicity	US/ diverse	US/ Asian	US/ Chinese	Zimbabwe/ Ethnic majority	Australia/ diverse	Australia/ Indigenous, non- indigenous	UK/ diverse
Mean age (range) or grade	M = 22.9 (18–76)	M = 20–21 University students	M = 20 University students	M = 15.7 (14–18)	M = 12.2 (10–15)	M = 13.6	M = 23.7
Items							
Spend time to learn	Exp	Eng	Eng	EI	Exp	Exp	Behav
Active in ethnic organizations	Exp	Eng	Eng	EI	Exp	Exp	Behav
Clear sense of ethnic background	Aff-Blg	Clarity	Clarity	EI	Aff-Blg	Exp	Cog
Think about group membership	Exp	Eng	Eng	< .32 <sup>a</sup>	Exp	Exp	Behav
Happy to be member	Aff-Blg	Pride	Pride	EI	Aff-Blg	Aff-Blg	Aff
Not very clear about the role of ethnicity	—	Clarity	—	< .32 <sup>a</sup>	—	—	—
Not spend much time to learn	—	Clarity	—	EI	—	—	—
Sense of belonging to group	Aff-Blg	Clarity	Clarity	EI	Aff-Blg	Aff-Blg	Cog
Understand group membership	Aff-Blg	Clarity	Clarity	EI	Aff-Blg	Aff-Blg	Cog
Talk to others about group	Exp	Eng	Eng	EI	Exp	Exp	Behav
Pride in ethnic group	Aff-Blg	Pride	Pride	EI	Aff-Blg	Aff-Blg	Aff
Participate in cultural practices	Exp	Eng	Eng	EI	Exp	Exp	Behav / Aff
Strong attachment to group	Aff-Blg	Eng / Pride	—	EI	Aff-Blg	Aff-Blg	Cog / Aff
Feel good about culture	Aff-Blg	Pride	Pride	EI	Aff-Blg	Aff-Blg	Aff

Note. US = United States, UK = United Kingdom, Eng = Engagement, Achieve<sup>b</sup> = Achievement, EI = Ethnic Identity, Exp<sup>b</sup> = Exploration, Aff-Blg<sup>c</sup> = Affirmation and Belonging, Behav = Behavioral, Cog = Cognitive, Aff = Affirmative

<sup>a</sup>Factor loading. <sup>b</sup>Factors related to *Exploration*: <sup>c</sup>Factors related to *Commitment*

The MEIM-R items (the 2008 British Columbia Adolescent Health Survey version) are shaded.

### **The 12-item version of the MEIM**

Roberts and colleagues (Roberts et al., 1999) examined the factor structure of a 14-item MEIM (not including six OGO items) among students in grades 6 to 8 from European American, African American, and Mexican American backgrounds. An initial EFA resulted in eliminating two negatively worded items from *Ethnic Identity Achievement*, which may have been difficult for younger adolescents to understand. A subsequent EFA indicated two factors (Table 4.1). *Affirmation, Belonging, and Commitment* included five items from the original *Affirmation and Belonging* subscale and two from the original *Achievement* subscale. The other factor, *Exploration* was comprised of three items from *Achievement* and two items from *Ethnic Behaviors*. The two constructs were consistent with the social identity and developmental perspectives. The two factors of ethnic identity were distinct but highly correlated ( $r = 0.70 - 0.75$ ).

### **The 6-item version of the MEIM**

Phinney and Ong (2007) recently developed a short version (6-item) of the MEIM. The revised scale consisted of *Exploration* (three items) and *Commitment* (three items). One item from *Exploration* was new, "I have often done things that will help me understand my ethnic background better" while other items were from the 12-item MEIM. Phinney and Ong then conducted confirmatory factor analyses (CFAs) with an ethnically diverse sample of US university students. They found that a correlated two-factor model fit the data. *Exploration* ( $\alpha = 0.76$ ) and *Commitment* ( $\alpha = 0.78$ ) were highly correlated ( $r = 0.74$ ).

### **Psychometric Testing of the MEIM with Diverse Populations**

Many researchers have conducted psychometric analyses of the MEIM with diverse populations both within and outside the US. The two-factor structure continues to be tested as some studies with adolescents (Dandy, Durkin, McEvoy, Barber, & Houghton, 2008; Gazis,

Connor, & Ho, 2010; Pegg & Plybon, 2005; Spencer, Icard, Harachi, Catalano, & Oxford, 2000; Yancey, Aneshensel, & Driscoll, 2001) and adults (Avery, Tonidandel, Thomas, Johnson, & Mack, 2007; Yoon, 2011) have supported this structure, while other studies have not. An analysis of adolescent data in Zimbabwe supported a one-factor solution (Worrell, Conyers, Mpofu, & Vandiver, 2006). A three-factor model (e.g., *Cognitive Clarity*, *Affective Pride*, and *Behavioral Engagement*) has been found to be optimal for young adults (Gaines et al., 2010; Juang & Nguyen, 2010; Lee & Yoo, 2004). While the MEIM has been used in Canada (Costigan et al., 2009), no psychometric research has been published. The results of those studies are summarized in Table 4.1.

The literature review of the MEIM indicated that the factor structure of the MEIM may vary across age or ethnic groups. Older youth, who have a higher level of cognitive ability, may have a well-differentiated and more complex sense of ethnic identity than younger youth (Juang & Nguyen, 2010; Lee & Yoo, 2004). Each ethnic group's unique histories, experiences, and values may result in different ethnic identity development (Cokley, 2007). Mixed findings of prior research thus may suggest that the MEIM is not invariant across age or ethnicity. That is, different groups (e.g., younger teens and older teens) may conceptualize the construct of ethnic identity differently or the scale may not operate in the same way across groups (Byrne, 2008; Cheung & Rensvold, 2002). If a measure is not invariant across groups, We do not know whether differences in observed means are *true* differences in the construct of interest or measurement artifact resulting from different psychometric responses to the scale items (Cheung & Rensvold, 2002). Measurement invariance is thus critical in meaningful group comparisons.

### **Measurement Invariance**

Measurement invariance has been widely tested by multigroup confirmatory factor analysis (MG-CFA), and there are four levels of invariance to test. The first level is *configural*

*invariance* to examine if people from different groups have the same conceptual framework to respond to the item (Wu, Li, & Zumbo, 2007). Configural invariance requires an identical factor structure (identical item sets associated with each factor), but not equivalent parameter estimates (e.g., factor loadings) across groups (Gregorich, 2006). Second, *weak (or metric) invariance* is tested by constraining factor loadings to be equal across groups. This test investigates if the same amount of changes in the latent factor score results in the same amount of change in the observed item score across groups (Wu et al., 2007). A lack of weak invariance may indicate that some items are more salient to the construct of interest for one group than for others (Campbell, Barry, Joe, & Finney, 2008). Third, the test of *strong (or scalar) invariance* assesses not only for equivalent factor loadings but also equivalent item intercepts (i.e., a location where a factor score is zero) across groups (Wu et al., 2007). Equal factor loadings alone are not sufficient to calibrate the same observed item score to the same latent factor score regardless of group membership. The last level of invariance is *strict invariance*, which involves the equality of residual (error) variances. If item residuals include only random errors, not systematic errors, they are expected to cancel out each other, and do not influence invariant item-factor relationships across groups that are tested by strong invariance (Wu et al., 2007). Strict invariance indicates that the measure is reliable across groups.

Invariance of the MEIM has been investigated by a handful of studies. The factor structure of the MEIM has been equivalent across different ethnic groups (Avery et al., 2007; Gazis et al., 2010; Roberts et al., 1999; Spencer et al., 2000; Yoon, 2011). Of those studies, two reported the equality of factor loadings (Avery et al., 2007; Gazis et al., 2010) but did not achieve the highest level of invariance. Although researchers have compared scores on the MEIM across ethnic groups (e.g., Gong, 2007; Negy, Shreve, Jensen, & Uddin, 2003), these comparisons across groups could be meaningless without evidence of invariance.

No published studies have examined whether or not the MEIM is invariant across age groups. Cognitive development and ethnic identity development during adolescence may affect the way teens respond to the scale items. Similarly, none has investigated measurement invariance within the same ethnic group with differing levels of acculturation or differing degrees of cultural influences. Cultural characteristics may affect group members' response styles. For example, collectivistic orientation, characterized by conformity and harmony, is associated with a higher middle response bias; individualistic orientation, which values independence and individual competence, is related to a higher extreme response bias (Harzing, 2006; Johnson, Shavitt, & Holbrook, 2011). Due in part to different degrees of influences by overarching collectivistic cultures (e.g., Asian cultures) or individualistic cultures (e.g., North American cultures) among East Asian teens, immigrants and Canadian-born youth may not use the same metric in responding to the MEIM items. In fact, among Asian university students in the US, foreign-born students (versus US-born) and those in the institution with a higher percentage of Asian students tended to have a middle response bias (Wang, Hempton, Dugan, & Komives, 2008). Likewise, ethnic language use, which is an indicator of one's orientation to the ethnic culture (Chia & Costigan, 2006; Greenman & Xie, 2008), may also influence one's response style. The relationship between response styles and acculturation was reported by a study of Hispanic adults (Marin, Gamba, & Marin, 1992). These response biases can be a source of lack of weak and strong invariance (Cheung & Rensvold, 2000; Gregorich, 2006).

### **Correlations with Psychological Well-being**

#### **Self-esteem**

The validity of the MEIM can be examined through correlational analyses with constructs that are theoretically related to ethnic identity such as psychological well-being. Past studies have shown the positive association between ethnic identity measured by the MEIM and

self-esteem (Phinney, Cantu, & Kurtz, 1997; Roberts et al., 1999; Schwartz, Zamboanga, & Jarvis, 2007; Umana-Taylor, 2004). Self-esteem was also significantly associated with both subscale scores of *Affirmation/Commitment* and *Exploration* (Kazarian & Boyadjian, 2008; Romero & Roberts, 2003). In contrast, a few studies did not show significant associations (Gaylord-Harden, Ragsdale, Mandara, Richards, & Petersen, 2007; Schwartz, Zamboanga, Weisskirch, & Rodriguez, 2009; Swenson & Prelow, 2005). To date, only one published study reported the relationship between ethnic identity measured by the 6-item MEIM and self-esteem. Among ethnic minority university students, total ethnic identity was positively correlated with self-esteem (Wei, Alvarez, Ku, Russell, & Bonett, 2010). However, in another sample of ethnic minority students, a significant association was not found (Wei et al., 2010).

Similar studies have been conducted for Asian youth. Total ethnic identity was significantly related to higher self-esteem among Chinese children and young adolescents in Canada (Costigan, Koryzma, Hua, & Chance, 2010) and Asian American college students (Gong, 2007; Lee, 2003), but not significantly among Korean American college students (Hovey, Kim, & Seligman, 2006). The association may be context dependent, as shown in a study where a significant association was observed for those living in Asian-concentrated areas, but not for those in Asian-dispersed, mainly White areas (Juang, Nguyen, & Lin, 2006).

### **Depression**

A negative correlation of ethnic identity with depression has been observed among some groups. A higher level of total ethnic identity was significantly associated with a lower level of depression for Chinese youth in Canada (Costigan et al., 2010); European American and African American adolescents, but not for Mexican Americans (Roberts et al., 1999); for Asian American university students in the Asian-concentrated context, but not for those in the Asian-dispersed context (Juang et al., 2006); and for African American university students, but

not for European Americans (Walker, Wingate, Obasi, & Joiner, 2008). No significant relations were found among African American or European American university students in a study by Swenson and Prelow (2005).

Two components of ethnic identity may relate differently to depression. A total score of ethnic identity and each of two subscale scores were all negatively correlated with depression among African American adolescents, whereas among European American adolescents, significant (negative) correlations of depression were observed with total ethnic identity and *Affirmation and Belonging*, but not with *Achievement* (Yasui, Dorham, & Dishion, 2004). Another study showed no significant association of depression with *Exploration* (Schwartz et al., 2009). University students in the achieved status (high *Exploration* and high *Commitment*), categorized based on scores on the 6-item MEIM, were less distressed than those in the diffused (low *Exploration* and low *Commitment*) or moratorium (high *Exploration* and low *Commitment*) status (Yoon, 2011). The relationship of ethnic identity with depression has not been as consistent across studies as with self-esteem, and may be different depending on the ethnic groups or the component of ethnic identity. A recent meta-analysis study of ethnic identity (measured by the MEIM or other instruments) showed that ethnic identity was related more strongly to positive well-being than to mental health symptoms (Smith & Silva, 2010). The magnitude of the association with self-esteem ( $r$ ) was 0.21 whereas those with anxiety or distress and depression or hopelessness were -0.06 and -0.10, respectively.

### **The Present Study**

Despite numerous studies on the MEIM, there is no psychometric research: a) using the 6-item MEIM for adolescents, b) for East Asians living in Canada, or c) investigating measurement invariance within an ethnic group. The objectives of this study were: a) to evaluate the psychometric properties of scores on the 6-item MEIM among East Asian adolescents in

British Columbia (BC); b) to examine measurement invariance across age groups and groups with differing degrees of cultural exposure; and c) to examine the relationship between ethnic identity and psychological well-being. As recommended by Cokley (2007), the current study focused on one ethnic group, rather than an ethnically heterogeneous sample, who accounts for nearly half of the visibly minority population in BC (Ministry of Attorney General and Minister Responsible for Multiculturalism, 2008).

The following hypotheses were tested:

H1) A correlated two-factor model would fit the data better than a one-factor model;

H2) Ethnic identity would be positively associated with self-esteem; and

H3) Ethnic identity would be negatively associated with emotional distress.

In order to answer objective b, the following two research questions were asked:

RQ1) Is the MEIM-R invariant across early, middle, and late East Asian adolescents?

RQ2) Is the MEIM-R invariant across East Asian adolescents varying in the degree of exposure to East Asian and Canadian cultures?

## **Methods**

### **Sample**

Data were drawn from the 2008 BC Adolescent Health Survey (BC AHS). The sample in this study included any students who selected “East Asian (e.g., Chinese, Japanese, Korean, etc.)” as their ethnic or cultural background. Of those East Asian Canadian youth ( $N = 4,311$ ), 4,190 (97.2%), who had no missing responses to the ethnic identity questions, were included in the analysis. Characteristics of the sample are summarized in Table 4.2. The majority (83.4%) of the sample marked only “East Asian” as their ethnic or cultural background. More than half had ever lived outside of Canada (55.8%) or spoke a language other than English at home most of the time (51.2%).



**Table 4.2. Characteristics of the Sample**

Items	Categories	%	
Gender	Female	52.2	
Age (years)			
	early adolescence	14 or younger	45.2
	middle adolescence	15 - 16	31.6
	late adolescence	17 or older	23.2
Years of stay in Canada			
	Less than 2 years	9.9	
	Between 2 and 5 years	18.0	
	Between 6 and 10 years	13.8	
	More than 10 years	14.2	
	All my life	44.2	
Speaking a language other than English at home			
	Never	15.2	
	Sometimes	33.6	
	Most of the time	51.2	
Ethnic/cultural background other than East Asian <sup>a</sup>			
	None (East Asian only)	83.4	
	European	11.7	
	Southeast Asian	3.9	
	Aboriginal/First Nations	3.3	
	Latin/South/Central American	1.5	
	African	0.9	
	South Asian	0.8	
	Australian, Pacific Islander	0.8	
	West Asian	0.7	
	Canadian	0.7	
	American	< 0.1	
	Don't know	0.2	

Note. N = 4,190

<sup>a</sup> Multiple responses were allowed

## Measures

### Ethnic identity

The MEIM-R was used in the 2008 BC AHS to assess the degree of ethnic identity among adolescents in BC. Prior the survey, comprehension and clarity of the measure were tested through focus groups and individual interviews with youth. One item, “*I have often done things that will help me understand my ethnic background better*” was found to be cognitively

difficult for the youth to understand. This item was newly created for the original MEIM-R and tested only to college student samples. It was thus replaced by a different item from the 14-item MEIM, “*I participate in cultural practices of my own group, such as special food, music, or customs.*” Items are presented in Table 4.3.

**Table 4.3. Multigroup Ethnic Identity Measure – Revised**

Q. Thinking about the ethnic or cultural group that you most identify with, how much do you agree or disagree with the following statements?

- 
- #1 I have spent time trying to find out more about my ethnic group, such as its history, traditions, and customs
  - #2 I have a strong sense of belonging to my own ethnic group
  - #3 I understand what my ethnic group membership means to me
  - #4 I participated in cultural practices of my own group, such as special food, music, or customs
  - #5 I have often talked to other people in order to learn more about my ethnic group
  - #6 I feel a strong attachment towards my own ethnic group
- 

*Note.* The *Exploration* subscale includes item #1, #4, and #5; the *Commitment* subscale includes #2, #3, and #6.

The MEIM-R was scored using a 5-point Likert scale ranging from 1 (*strong disagree*) through 5 (*strongly agree*), so that higher scores indicated stronger ethnic identity. A score was created by averaging items in each subscale (*Exploration* and *Commitment*) and of the scale as a whole. The BC AHS did not ask with which ethnic group students most identify, although students were asked to select one or more cultural or ethnic background from nine response options. An ethnic group with which they most identify may not be consistent with the one(s) chosen as their cultural or ethnic background. For example, of 212 Korean American high school students in Los Angeles (46% U.S.-born and 22% came to the U.S. before the age of 6), 39% self-identified as Korean, 41% as Korean American, and 20% as American (Shrake, 1996). Students who marked “East Asian” as their ethnic background could have identified with “Asian,” “Asian Canadian,” “Chinese,” “Korean Canadian,” “Canadian,” and so on.

### Self-esteem

Self-esteem was measured with a 7-item Self-esteem scale (Table 4.4) derived from the Minnesota Student Survey, a state-wide census administered to public school students in grades 6, 9, and 12. This global self-esteem scale was originally adapted from the 10-item Rosenberg Self-esteem Scale (Rosenberg, 1989) that has been widely used with adolescent populations. Each of the seven items was rated on a 4-point Likert-type scale ranging from 1 (*disagree*) to 4 (*agree*). Negatively worded items were reverse-coded so that higher scores indicated higher self-esteem. A score was calculated by averaging the seven items. Cronbach's coefficient alpha in this East Asian sample was 0.86.

**Table 4.4. Self-Esteem Scale**

Q. How much do you agree with the following statements?

- 
- #1 I usually feel good about myself
  - #2 I am able to do things as well as most other people
  - #3 On the whole, I'm satisfied with myself
  - #4 I feel I do not have much to be proud of
  - #5 Sometimes I think that I am no good
  - #6 I feel that I can't do anything right
  - #7 I feel that my life is not very useful
- 

### Emotional distress

Emotional distress was assessed with a mean score on three items derived from the General Well-Being (GWB) Scale. The GWB scale (Dupuy, 1970, cited in Karatzias, Chouliara, Power, & Swanson, 2006) consists of 18 items indicating general subjective well-being, with six subscales measuring hypothesized dimensions of well-being such as anxiety, depression, positive well-being, self-control, vitality, and general health (Taylor et al., 2003). The BC AHS included two items from the Anxiety subscale and one from Depression. An emotional distress score was calculated with a mean from responses to the three questions: a) During the past 30

days, have you felt you were under any strain, stress or pressure? b) During the past 30 days, have you been bothered by nervousness or “nerves”? and c) During the past 30 days, have you felt so sad, discouraged, hopeless or had so many problems that you wondered if anything was worthwhile? Each item was rated on a 5-point scale indicating frequency of occurrence or severity. Higher scores indicated higher levels of distress. Cronbach’s coefficient alpha in this sample was 0.76.

### **Age**

Three age groups were created according to adolescent developmental stages: a) early adolescents aged 14 or younger ( $n = 1,892$ ), b) middle adolescents aged 15 or 16 ( $n = 1,325$ ), and c) late adolescents aged 17 or older ( $n = 973$ ). Each stage is marked by significant physical, cognitive, and psychosocial changes (Breinbauer & Matilde, 2005; Saewyc, Taylor, Homma, & Ogilvie, 2008).

### **Cultural exposure**

As in Project One (see Chapter 3), respondents were grouped into four categories based on their answers to a language spoken at home (an indicator of exposure to East Asian cultures) and length of time in Canada (an indicator of exposure to Canadian culture): a) immigrants speaking a heritage language at home ( $n = 1,632$ ), b) Canadian-born speaking a heritage language at home ( $n = 697$ ), c) immigrants speaking English at home ( $n = 507$ ), and d) Canadian-born speaking English at home ( $n = 1,336$ ).

### **Analysis**

Statistical analyses were conducted on unweighted data. Because the purpose of this study was not to estimate population parameters, the use of unweighted data for factor analyses, which is conventional, was not problematic.

### **Factor structure**

To examine whether a two-factor model of ethnic identity fit the data better than a one-factor model, a confirmatory factor analysis (CFA) was performed using polychoric correlations with a robust maximum likelihood estimation. The use of polychoric correlations is appropriate for CFA with ordinal variables such as responses scored on a 5-point Likert scale (Joreskog, 1994; Jöreskog & Moustaki, 2001). As proposed by Phinney and Ong (2007), the two-factor model had three indicators of *Exploration* (item #1, #4, and #5) and three indicators of *Commitment* (item #2, #3, and #6). The one-factor model had six items that loaded on a single factor of *Total Ethnic Identity*.

Jöreskog's approach (2001) was employed to run a CFA. This approach assumes the existence of a normally distributed, latent continuous variable that underlies each observed ordinal variable; thus, item responses are generated by exceeding a certain number of latent thresholds on the underlying continuum. Using LISREL version 8.80 for Windows (Software International Inc., Lincolnwood, IL, USA), polychoric correlations were first estimated, and parameters of the model were then estimated by a robust maximum likelihood method. Rather than the  $\chi^2$  goodness of fit test, which are sensitive to sample size (Cheung & Rensvold, 2002), supplemental fit indices were used to assess model fit. Cutoff values were  $< 0.08$  for the RMSEA,  $\geq 0.95$  for the CFI,  $< 0.08$  for the standardized root mean square residual (SRMR) (Brown, 2006; Browne & Cudeck, 1992; Hu & Bentler, 1999).

### **Measurement invariance**

A series of MG-CFA with ordinal variables were conducted using LISREL. Using estimated item thresholds calculated by PRELIS, which were set to be equal across groups, polychoric correlation and asymptotic covariance matrices were computed and used for MG-CFAs by LISREL (Jöreskog & Sörbom, 2006; Millsap & Yun-Tein, 2004). Following

procedures proposed by Wu et al. (2007), configural invariance was tested by constraining an appropriate factor structure determined by previous single-group CFAs (i.e., one-factor or two-factor model) to be the same across groups. The same criteria for single-group CFA described above (RMSEA < 0.08, CFI  $\geq$  0.95) were used to evaluate if respondents from different groups had the same basic conceptualization of ethnic identity. Weak, strong, and strict invariance was examined by constraining factor loadings, intercepts, and residual variances, respectively to be equal. When a difference in CFI ( $\Delta$  CFI) between two nested models (e.g., configural model and weak invariance model) was less than 0.02, the more restricted model was supported (Cheung & Rensvold, 2002). Only when a less constrained model was supported, the next level of invariance was examined.

### **Correlations**

Bivariate correlations were used to examine the relationship between ethnic identity and psychological well-being (self-esteem and emotional distress). SPSS version 18.0 was used to produce Pearson correlation coefficients.

## **Results**

### **Psychometric Properties of the Scores on the MEIM-R**

Table 4.5 presents results of psychometric analysis. The correlated two-factor model, comprised of *Exploration* and *Commitment*, demonstrated an adequate fit to the data (RMSEA = 0.061; CFI = 0.99; SRMR = 0.03). Factor loadings ranged from 0.67 to 0.87 (Table 4.5). A correlation ( $r$ ) of the two factors was 0.85. Cronbach's alphas were 0.73 for *Exploration* and 0.83 for *Commitment*.

In the one-factor model, CFI of 0.98 and SRMR of 0.04 indicated an adequate fit to the data; however, RMSEA of 0.094 exceeded the cutoff value (< 0.08). Factor loadings ranged from 0.63 to 0.85. Cronbach's alpha was 0.86.

**Table 4.5. Results of Confirmatory Factor Analyses of the Multigroup Ethnic Identity Measure – Revised**

	One-factor	Two-factor	
S-B $\chi^2$ (df)	344.08 (9) <sup>a</sup>	133.34 (8) <sup>a</sup>	
RMSEA (90% CI)	0.094 (0.086, 0.103)	0.061 (0.052, 0.071)	
SRMR	0.04	0.03	
CFI	0.98	0.99	
Standardized factor loadings		<i>Exploration</i>	<i>Commitment</i>
Spending time trying to find out more about group	0.66	0.73	—
Participating in cultural practices of group	0.63	0.67	—
Talking to other people to learn more about group	0.68	0.77	—
A strong sense of belonging to group	0.82	—	0.84
Understanding what group membership means to me	0.79	—	0.79
A strong attachment towards group	0.85	—	0.87
Interfactor correlation	—	0.85	
Cronbach's alpha	0.86	0.73	0.83

Note. S-B  $\chi^2$  = Satorra-Bentler scaled chi-square; RMSEA = root mean-square error of approximation; CI = confidence interval; SRMR = standardized root mean-square residual; CFI = comparative fit index.  
<sup>a</sup>  $p < 0.001$ .

### Measurement Invariance

#### Age

Table 4.6 presents the results of a series of MG-CFA. First, configural invariance across different age groups was tested and supported (RMSEA = 0.065, CFI = 0.99). Weak, strong, and strict invariance were supported. The MEIM-R was invariant among early, middle, and late adolescents of East Asian heritage, suggesting that items were interpreted similarly across age groups.

#### Cultural exposure

Based on the fit indices (RMSEA = 0.067, CFI = 0.99), configural invariance was

supported: The four groups of East Asian teens with differing degree of exposure to East Asian and Canadian cultures had the same conceptual frames when responding to the MEIM-R (see Table 4.6). The weak, strong, and strict invariance model fit as well as the configural model ( $\Delta$  CFI = 0.00). It can be concluded that the scores of the MEIM-R carry the same meaning for the four different degrees of cultural exposure groups.

**Table 4.6. Results for Measurement Invariance Tests**

Model		S-B $\chi^2$ (df)	RMSEA	CFI	$\Delta$ CFI
<b><u>Age</u></b>					
Configural	Constraining the factor structure to be equal	165.86 (24)	0.065	0.99	—
Weak	Constraining the factor structure and factor loadings to be equal	225.77 (38)	0.060	0.99	0.00
Strong	Constraining the factor structure, factor loadings, and intercepts to be equal	270.29 (50)	0.056	0.99	0.00
Strict	Constraining the factor structure, factor loadings, intercepts, and residual variances to be equal	239.19 (62)	0.045	0.99	0.00
<b><u>Cultural Exposure</u></b>					
Configural	Constraining the factor structure to be equal	182.50 (32)	0.067	0.99	—
Weak	Constraining the factor structure and factor loadings to be equal	265.40 (53)	0.062	0.99	0.00
Strong	Constraining the factor structure, factor loadings, and intercepts to be equal	514.58 (71)	0.077	0.98	0.01
Strict	Constraining the factor structure, factor loadings, intercepts, and residual variances to be equal	405.84 (89)	0.059	0.98	0.00

*Note.* The correlated two-factor model was used. S-B  $\chi^2$  = Satorra-Bentler scaled chi-square; RMSEA = root mean-square error of approximation; CFI = comparative fit index;  $\Delta$  CFI = difference in comparative fit indices

### **Bivariate Correlations with Psychological Well-being**

As hypothesized, self-esteem was positively correlated with *Total Ethnic Identity* ( $r = 0.15$ ), *Exploration* ( $r = 0.11$ ), and *Commitment* ( $r = 0.17$ ), although the magnitudes of the associations were modest. On the other hand, only one statistically significant but very small correlation was found between emotional distress and the *Commitment* subcomponent ( $r =$



-0.05). Though the direction of the relationship was consistent with the hypothesis, *Total Ethnic Identity* was not significantly associated with emotional distress ( $r = -0.02$ ). The *Exploration* subcomponent had a positive but non-significant correlation with emotional distress ( $r = 0.01$ ). These results are shown in Table 4.7.

**Table 4.7. Correlations between Ethnic Identity and Psychological Well-Being**

(N)	Mean (SD)	Self-Esteem (4,139)	Emotional Distress (4,133)
Total Ethnic Identity	3.52 (0.73)	0.15***	-0.02
Exploration	3.42 (0.78)	0.11***	0.01
Commitment	3.61 (0.82)	0.17***	-0.05**

\*\*  $p < 0.01$ .; \*\*\*  $p < 0.001$ .

## Discussion

This study investigated psychometric properties of the scores on the MEIM-R administered to East Asian adolescents in BC. In line with a study of ethnically diverse university students (Phinney & Ong, 2007), the two-factor model demonstrated a better fit than the one-factor model, supporting the first hypothesis. For East Asian teens, ethnic identity was comprised of *Exploration* and *Commitment* components, as suggested by social identity theory (Tajfel, 1981) and developmental perspectives (Marcia, 1980, 1994). At the same time, similar to previous studies (e.g., Phinney & Ong, 2007; Roberts et al., 1999), the present study showed a high correlation between the two distinct components of ethnic identity. The strong association between the two factors is theoretically expected. Exploration requires a certain level of commitment and then leads to a stronger commitment; a commitment to one's ethnic group increases interest in exploration (Phinney & Ong, 2007). Phinney and Ong (2007) stated that the two subscales may be useful in studying the process of ethnic identity development; the combined scale may be used when the overall strength of ethnic identity is the focus of the study.

Researchers may thus use either a combined measure of *Total Ethnic Identity* or two separate subscales of *Exploration* and *Commitment*, depending on their research or practical interests (Phinney & Ong, 2007; Roberts et al., 1999).

Alpha coefficients for *Total Ethnic Identity* and *Commitment* indicated good internal consistency reliability of the items whereas for *Exploration* the alpha coefficient was lower, yet acceptable. The small number of the items in the subscale partially contributed to the lower alpha. However, studies that used the 12-item MEIM reported similar levels of Cronbach's alpha for *Exploration* (5 items) and *Commitment* (7 items); for instance, 0.70 and 0.84, respectively (Roberts et al., 1999), and 0.74 and 0.83, respectively (Dandy et al., 2008).

The results of MG-CFAs provided statistical evidence of measurement invariance of the MEIM-R. The ethnic identity scale measured the same constructs on the same metric across three age groups of East Asian teens (early, middle, and late adolescence) as well as across four groups categorized based on primary home language and years in Canada. Regardless of their developmental levels, linguistic barriers, or cultural differences, younger teens and older teens, and immigrant students and Canadian-born students had similar conceptual frames, and responded to the items on the MEIM-R in a similar way. Contrary to past research, which used the 12-item or 14-item MEIM, that did not ensure higher levels of invariance than weak invariance (e.g., Avery et al., 2007), this study achieved strict invariance. The brevity of the 6-item MEIM-R may contribute to this finding, although even a simple scale cannot be assumed to be invariant given the potential response style biases. The results also highlight the importance of group or individual interviews and pilot tests with youth to evaluate understandability and clarity of the items, particularly when a measure is administered to new populations.

This study conducted correlational analysis with psychological well-being. Ethnic

identity was significantly correlated with self-esteem among East Asian teens. The direction of the relationship was as hypothesized. Although the strength was small ( $r_s < 0.2$ ), the coefficient values were similar to those observed in most past studies (e.g., Roberts et al., 1999; Romero & Roberts, 2003; Smith & Silva, 2010; Umana-Taylor, 2004). In contrast, the findings regarding emotional distress only partially supported the hypothesis. Though *Commitment* was negatively correlated with distress, the effect size was very small. *Total Ethnic Identity* did not have a significant association with emotional distress, although the direction of the association was as expected. The small effect sizes, however, were not surprising as they were reported in previous studies (e.g., Roberts et al. 1999; Swenson & Prelow, 2005) and a meta-analysis (Smith & Silva, 2010). Contrary to the hypothesis, the relationship between *Exploration* and distress was positive but the coefficient was not significantly different from zero. The correlation of depressive symptoms with *Exploration* in previous studies tended to be weaker than that with *Commitment* and to be not significant (Schwartz et al., 2009; Yasui et al., 2004; Yoon, 2011). Merely an interest and involvement in learning about one's own ethnic background may not prevent mental health problems.

Limitations to this study should be taken into account when interpreting the results. First, this was a secondary analysis of existing data. The original survey (the 2008 BC AHS) was not developed specifically for psychometric evaluation of the MEIM-R. There would be other approaches to examining the validity of the instrument, such as correlating the MEIM-R scores with the 12-item MEIM scores or other ethnic identity measures (e.g., the Ethnic Identity Scale developed by Umaña-Taylor, Yazedjian, & Bámaca-Gómez, 2004). Family ethnic socialization could also be positively correlated with ethnic identity (Juang & Syed, 2010; Umaña-Taylor, Bhanot, & Shin, 2006). Second, the BC AHS did not ask about respondents or their ancestors' countries of origin, groups with which respondents identified, or generational

status. The current study assumes that self-reported East Asians have many similarities while recognizing within-group differences in their ethnic identity characteristics. Finally, a limitation inherent to the MEIM-R is the small number of items to measure ethnic identity. Compared to the 12-item MEIM, the 6-item MEIM, especially 3-item subscales, are more limited in their ability to measure this multidimensional concept.

Despite the limitations, the MEIM-R appears to be a reliable and valid instrument to measure levels of ethnic identity among East Asian adolescents in Canada. Given that ethnic identity is a potential protective factor associated with psychological adjustment and risky behaviors (e.g., Choi, Harachi, Gillmore, & Catalano, 2006; Shrake & Rhee, 2004), it is important to assess its levels and development. This scale is useful particularly when incorporated into large-scale youth health surveys. Such surveys as the BC AHS contain many questions to cover a wide range of areas related to adolescent life, including demographic information, physical and psychosocial health, and social environments and relationships. Therefore, multiple, lengthy measures are not generally feasible, especially when administered to early teenagers or in school settings due to respondent burden and constraints of time. The use of the 6-item measure would thus be a practical choice.

## **Chapter 5. Project Three: Exploring the Role of Ethnic Identity in Sexual Initiation Among East Asian Adolescents in Canada**

### **Introduction**

As the immigrant population has increased, the well-being of immigrants and their offspring has become a public health issue (Weiss & Garbanati, 2006). In Canada, 20% of the total population, the highest proportion since 1931, were born outside of the country (Chui, Tran, & Maheux, 2007). Among the top 10 source countries, two are East Asian: China (including Hong Kong and Taiwan), which has been the leading source country during the past decade, and South Korea. The Chinese are the second largest visible minority group next to South Asians, accounting for 24% of the visible minority population. However, little research has been done on health and risky behaviors among teenagers of East Asian origin in Canada.

Project One (Chapter 3) showed a lower percentage (< 10%) of East Asian teens in British Columbia (BC) who had ever had sexual intercourse compared with the provincial average of 22%. In addition, the percentages varied by degree of temporal and linguistic exposure to Canadian or East Asian cultures within the East Asian group. Spending all one's life in Canada and English use at home were associated with higher odds of sexual initiation. These results were consistent with past studies on ethnic minority youth; cultural factors thus appear to be key in understanding sexual activity among immigrant and ethnic minority adolescents. But most research has been conducted in the United States (US) (e.g., Hahm, Lahiff, & Barreto, 2006). This chapter focuses on the relationship between sexual initiation and another cultural factor, ethnic identity.

Acculturation is a process of adapting to a different cultural environment and usually accompanied by changes in one's values, norms, and behavior (Berry, Phinney, Sam, & Vedder, 2006). Using degree of temporal or linguistic cultural exposure such as birthplace, years spent in

a host country, or heritage language as demographic and behavioral markers of acculturation, numerous studies have shown a relationship between a higher level of acculturation and involvement in sexual activity (e.g., Adam, McGuire, Walsh, Basta, & LeCroy, 2005; Hahm et al., 2006; Upchurch, Aneshensel, Mudgal, & McNeely, 2001). Greater exposure to a host country (e.g., longer residence or native-born) is believed to lead to absorbing its cultural patterns, which then leads to greater acculturation (Chia & Costigan, 2006b; Greenman & Xie, 2008; Thomson & Hoffman-Goetz, 2009). Conversely, speaking one's heritage language at home is assumed to reflect a closer link with one's culture of origin, whereas adolescents speaking English at home are generally considered more acculturated (Greenman & Xie, 2008).

Another cultural factor, ethnic identity, is a sense of self as a member of an ethnic group and focuses on subjective feelings about one's ethnicity (Phinney, 2003). Ethnic identity consists of several components such as commitment (a sense of belonging), exploration (seeking out information and experiences regarding one's ethnic group), and values and beliefs (Phinney & Ong, 2007). As stated by Phinney (2003) and Schwartz and colleagues (Schwartz, Unger, Zamboanga, & Szapocznik, 2010), ethnic identity may be one aspect of acculturation at least for immigrants, and may be related to but distinct from other aspects of acculturation. For example, heritage language use with parents had only a modest association with ethnic identity ( $r = 0.30$  for ethnic identity commitment,  $r = 0.26$  for ethnic identity exploration) among US adolescents from Latino and Asian backgrounds (Oh & Fuligni, 2010). Therefore, ethnic identity may be able to explain some of the variance unexplained by other cultural factors.

Ethnic identity has been positively associated with psychological well-being (Smith & Silva, 2010; Umaña-Taylor, 2011). Recently, interest has turned to its relationship with health and risk behaviors. Although mechanisms underlying the relationship are not well understood, some hypotheses were provided by Zamboanga and colleagues (Zamboanga, Raffaelli, &

Horton, 2006). Ethnic identity can be a risk factor for people with high levels of ethnic identity whose values and behaviors conflict with those of the mainstream culture. Such conflicts may create stress, which in turn increases the risk of health compromising behavior. On the other hand, strong social and psychological connections with an ethnic group can be a source of support that promotes healthy development and protects adolescents from risk exposure. In addition, the association between ethnic identity and risk behavior may be mediated by psychological well-being. Using structural equation modeling, Schwartz and colleagues (Schwartz, Zamboanga, & Jarvis, 2007) tested the pathways from acculturation and ethnic identity to academic grades, prosocial behavior, and externalizing behavior as well as the mediating role of acculturation stress and self-esteem. The results indicated that stronger ethnic identity was related to higher self-esteem, not acculturative stress, which in turn decreased externalizing behavior. However stronger ethnic identity was not significantly related to academic grades or prosocial behavior.

Some researchers have investigated the relationship between ethnic identity and sexual initiation among adolescents and young adults. In a study of Latina adolescents, a higher level of ethnic affirmation/belonging was associated with lower odds of ever having sexual intercourse whereas ethnic identity achievement (the exploration of what one's ethnic group means to one and a clear sense of one's ethnicity) was not (Jarrett, 2011). In contrast, Cuban American college women with stronger ethnic identity were more likely to have ever had sexual intercourse (Raffaelli, Zamboanga, & Carlo, 2005). Other research has reported no association: lifetime sexual experience (vaginal, oral, or anal sex) was not related to ethnic identity among eighth-grade Hispanic adolescents who were rated by their parents as having behavior problems (Schwartz et al., 2009). However, at such a young age few adolescents are likely to be sexually active, and this may have contributed to lack of significant findings. In a study of Black college

women, mean “racial identity” scores (measured by the Multigroup Ethnic Identity Measure; Phinney, 1992) did not differ between sexually active and non-active women (Stokes, 2005).

Stronger ethnic identity does not appear to be protective against sexual initiation among young adults. The results of research on young adults, however, are not generalizable to adolescents in part because of different sexual norms between these groups. Norms and attitudes about sexual activity for young adults are more permissive. In fact, more than half of college women in studies by Raffaelli et al. (2005) and Stokes (2005) were already sexually active. Similarly, findings from research on one ethnic group may not be relevant to another group. For instance, a survey of African American, Latino American, and European American college students showed that more frequent condom use was associated with a higher level of ethnic identity only for the European group (Espinosa-Hernandez & Lefkowitz, 2009). Thus, the findings of Latina adolescent girls in Jarrett’s study (2011) may not be applicable to East Asian adolescents.

No published research appears to have reported the relationship between ethnic identity and sexual initiation among East Asian teens in Canada or the US. One study investigated risky sexual behaviors among young adult East Asian women who had recently had sexual intercourse, but did not show significant findings (Lee, 2000). However, Lee pointed out some limitations of the ethnic identity scale, the Asian American Ethnic Identity Questionnaire (Yamauchi, 1981, as cited in Lee, 2000). This scale measures only one dimension of ethnic identity, which is traditional Asian values such as obedience to authority, filial piety, and group orientation; other dimensions may be more important. Additionally, the instrument was developed in 1981; thus, the statements or wording may no longer reflect the values to which East Asians relate. Studies using a newer measure of ethnic identity are needed. In summary, we have very limited knowledge about whether or how ethnic identity is associated with sexual



activity among East Asian youth.

The purpose of this study was to investigate the relationship between ethnic identity and sexual initiation in a sample of East Asian adolescents in British Columbia (BC). Given the lack of existing evidence from prior research, directional hypotheses were not appropriate. The following research question guided the study: Is stronger ethnic identity associated with increased or decreased odds of ever having sexual intercourse among East Asian adolescents?

## **Methods**

### **Sample**

This study used data from the 2008 British Columbia Adolescent Health Survey (BC AHS). The sample consisted of 4,311 students in grades 7 through 12, who marked 'East Asian' as their cultural or ethnic background. More details on the survey procedure and the study sample can be found in Chapter 2.

### **Measures**

#### **Sexual initiation**

The category of "students who initiated sexual intercourse" included those who reported having had sexual intercourse and/or indicated involvement in sexual intercourse such as reporting age at first intercourse, one or more lifetime or recent sexual partners, substance use before last intercourse, contraceptive use at last intercourse, and pregnancy involvement. This variable was coded as *yes* or *no*.

#### **Ethnic identity**

Ethnic identity was measured by a modified version of the Multigroup Ethnic Identity Measure – Revised (MEIM–R; Phinney & Ong, 2007). The 6-item MEIM-R was developed based on the 12-item MEIM (Roberts et al., 1999), to assess two core components of ethnic identity: a) active involvement in seeking information regarding one's ethnic group and

participation in ethno-cultural practices (*exploration*) and b) a sense of belonging and commitment to one's ethnic group (*commitment*). Students responded on a scale of 1 (strongly disagree) to 5 (strongly agree). As found in Project Two (Chapter 4), a two-factor model, consisting of three exploration items and three commitment items, fit better to the data than a one-factor model, although the two factors were highly correlated ( $r = 0.85$ ). Based on the results of Jarrett (2011), two subscale scores as well as a total ethnic identity score were used. Average scores were computed, indicating that higher scores reflected higher levels of ethnic identity. Cronbach's alphas were 0.86 for total ethnic identity, 0.73 for *exploration*, and 0.83 for *commitment*. For more details on the ethnic identity measure, please refer to Chapter 4.

It should be noted that the BC AHS did not specifically ask with which ethnic or cultural group(s) a respondent identified. Students who marked "East Asian" as their ethnic or cultural background may have self-identified as, for example, "Chinese," "Asian," "Korean Canadian," "Asian Canadian," or "Canadian." This instrument did not necessarily measure the seeking of information on Chinese, Korean, or Japanese origin or a sense of belonging to these groups.

### **Cultural exposure**

The degree of exposure to Canadian or East Asian cultures was assessed by a combination of two proxy measures. Based on two questions, "How long have you lived in Canada?" and "How often do you speak a language other than English at home?", four groups were created: a) immigrants speaking a heritage language at home, b) immigrants speaking English at home, c) Canadian-born speaking a heritage language at home, and d) Canadian-born speaking English at home.

### **Demographic covariates**

Older adolescents are more likely to have ever had sexual intercourse (Smith et al.,

2009); thus, age was included in analyses as a covariate. This was a continuous variable, ranging from 12 to 19 years. Living arrangement is another demographic factor associated with teen sexual activity (e.g., Laflin, Wang, & Barry, 2008; Roche et al., 2005; Wong, Homma, Johnson, & Saewyc, 2010). This variable was dichotomized (living with one or two parents = 0, not living with parents = 1) because in this study, East Asian adolescents who reported living with a single parent, either mother or father, were as likely as their peers living in a two-parent household to have had sexual intercourse.

### **Analysis**

As in Project One (Chapter 3), analyses, stratified by gender, were conducted by using the Complex Sample module of SPSS version 18.0 to handle complex survey data. Data were weighted to adjust for unequal probabilities of selection and differential response rates and to provide a provincial representation of all regular public school students throughout BC.

Logistic regressions were performed to examine relationships between levels of ethnic identity (exploration, commitment, and total ethnic identity) and having engaged in sexual intercourse. The independent variables in the first model (Model 1) were ethnic identity, age, and living arrangement; cultural exposure was then added to the first model (Model 2).

## **Results**

### **Descriptive Analysis**

Table 5.1 shows descriptive statistics of variables of interest in this study. The mean age of the sample was 15.1 years. The vast majority of the adolescents in this study reported living with one or two parents. On average, East Asian students had moderate to high levels of ethnic identity. Exploration, not commitment or total ethnic identity, differed by gender with girls indicating slightly greater exploration. Approximately 40% of the sample had ever lived outside of Canada and primarily spoke a heritage language at home; 30% reported having lived in

Canada all their life and primarily spoke English at home.

**Table 5.1. Descriptive Statistics of Variables**

	Boys	Girls
N (weighted)	22,601	25,507
Age, mean (standard deviation)	15.1 ( $\pm 1.84$ )	15.1 ( $\pm 1.82$ )
Living arrangement, %		
Living with two parents	62.2	62.2
Living with one parent	29.8	31.0
Living with no parents	8.0	6.8
Ethnic identity (range, 1-5), mean (95% confidence intervals)		
Exploration	3.40 (3.36, 3.44)	3.46 (3.42, 3.49)
Commitment	3.64 (3.60, 3.68)	3.62 (3.58, 3.66)
Total ethnic identity	3.52 (3.48, 3.56)	3.54 (3.50, 3.57)
Cultural exposure, %		
Immigrants, speaking a heritage language at home	39.9	40.8
Canadian-born, speaking a heritage language at home	11.5	13.5
Immigrants, speaking English at home	18.0	14.8
Canadian-born, speaking English at home	30.5	30.8
Ever had sexual intercourse, %	9.1	9.7

### Logistic Regression Analysis

Results of multivariate logistic regression analyses are displayed in Table 5.2 for boys and Table 5.3 for girls. When age and living arrangement were taken into account, boys with higher levels of ethnic identity commitment or total ethnic identity were 25% less likely than boys with lower commitment or lower total ethnic identity to report ever having sexual intercourse. On the other hand, the odds of sexual initiation were not significantly associated with exploration. Among girls, stronger exploration, commitment, and total ethnic identity were all significantly associated with about 30 - 35% lower odds of ever having intercourse.

Next, cultural exposure, along with demographic covariates and either exploration, commitment, or total ethnic identity score were entered in logistic regression models (Model 2). Stronger commitment and total ethnic identity, but not exploration, were significantly associated

with a 20% lower likelihood of sexual initiation among boys. Girls with higher levels of exploration or higher total ethnic identity scores were about 30% less likely than other girls to report that they had ever had sexual intercourse. Commitment, however, was no longer significantly associated with sexual initiation among girls.

**Table 5.2. Multivariate Logistic Regressions of Sexual Initiation on Ethnic Identity, Cultural Exposure, and Demographic Covariates Among Boys**

	Model 1		Model 2	
	OR	95% CI	OR	95% CI
<b><u>Exploration</u></b>				
Age	<b>1.57</b>	1.41, 1.74	<b>1.59</b>	1.43, 1.78
Not living with parent(s) <sup>a</sup>	<b>2.26</b>	1.41, 3.62	<b>2.57</b>	1.56, 4.23
Exploration	0.81	0.64, 1.03	0.88	0.69, 1.12
Immigrants speaking a heritage language at home			1.00	
Canadian-born speaking a heritage language at home			1.46	0.76, 2.83
Immigrants speaking English at home			1.43	0.88, 2.34
Canadian-born speaking English at home			<b>1.97</b>	1.28, 3.04
<b><u>Commitment</u></b>				
Age	<b>1.57</b>	1.41, 1.74	<b>1.59</b>	1.43, 1.78
Not living with parent(s) <sup>a</sup>	<b>2.26</b>	1.41, 3.61	<b>2.58</b>	1.57, 4.24
Commitment	<b>0.75</b>	0.61, 0.92	<b>0.80</b>	0.65, 0.98
Immigrants speaking a heritage language at home			1.00	
Canadian-born speaking a heritage language at home			1.48	0.76, 2.87
Immigrants speaking English at home			1.38	0.85, 2.24
Canadian-born speaking English at home			<b>1.91</b>	1.25, 2.93
<b><u>Total Ethnic Identity</u></b>				
Age	<b>1.57</b>	1.41, 1.74	<b>1.59</b>	1.43, 1.78
Not living with parent(s) <sup>a</sup>	<b>2.26</b>	1.42, 3.62	<b>2.57</b>	1.57, 4.23
Total ethnic identity	<b>0.75</b>	0.58, 0.95	<b>0.80</b>	0.63, 0.98
Immigrants speaking a heritage language at home			1.00	
Canadian-born speaking a heritage language at home			1.46	0.75, 2.84
Immigrants speaking English at home			1.40	0.86, 2.28
Canadian-born speaking English at home			<b>1.91</b>	1.24, 2.95

Note. Boldface numbers indicate  $p < 0.05$ .

OR = odds ratio, CI = confidence interval

<sup>a</sup> Reference group = living with one or two parent(s)

**Table 5.3. Multivariate Logistic Regressions of Sexual Initiation on Ethnic Identity, Cultural Exposure, and Demographic Covariates Among Girls**

	Model 1		Model 2	
	OR	95% CI	OR	95% CI
<b><u>Exploration</u></b>				
Age	<b>1.69</b>	1.53, 1.88	<b>1.76</b>	1.57, 1.97
Not living with parent(s) <sup>a</sup>	<b>1.79</b>	1.09, 2.94	<b>2.03</b>	1.19, 3.49
Exploration	<b>0.65</b>	0.53, 0.80	<b>0.71</b>	0.57, 0.88
Immigrants speaking a heritage language at home			1.00	
Canadian-born speaking a heritage language at home			1.09	0.53, 2.24
Immigrants speaking English at home			1.57	0.95, 2.60
Canadian-born speaking English at home			<b>2.43</b>	1.56, 3.78
<b><u>Commitment</u></b>				
Age	<b>1.68</b>	1.51, 1.87	<b>1.74</b>	1.56, 1.95
Not living with parent(s) <sup>a</sup>	<b>1.77</b>	1.07, 2.93	<b>2.01</b>	1.16, 3.47
Commitment	<b>0.72</b>	0.58, 0.90	0.80	0.63, 1.01
Immigrants speaking a heritage language at home			1.00	
Canadian-born speaking a heritage language at home			1.06	0.51, 2.19
Immigrants speaking English at home			1.56	0.95, 2.55
Canadian-born speaking English at home			<b>2.42</b>	1.55, 3.75
<b><u>Total Ethnic Identity</u></b>				
Age	<b>1.69</b>	1.53, 1.88	<b>1.76</b>	1.57, 1.96
Not living with parent(s) <sup>a</sup>	<b>1.78</b>	1.08, 2.93	<b>2.02</b>	1.17, 3.47
Total ethnic identity	<b>0.64</b>	0.50, 0.80	<b>0.71</b>	0.56, 0.90
Immigrants speaking a heritage language at home			1.00	
Canadian-born speaking a heritage language at home			1.08	0.53, 2.22
Immigrants speaking English at home			1.53	0.93, 2.53
Canadian-born speaking English at home			<b>2.36</b>	1.52, 3.67

Note. Boldface numbers indicate  $p < 0.05$ .

OR = odds ratio, CI = confidence interval

<sup>a</sup> Reference group = living with one or two parent(s)

In Model 2, compared with immigrant boys speaking a heritage language at home, Canadian-born boys speaking English at home were about twice as likely to report that they had ever had sexual intercourse when exploration, commitment, or total ethnic identity was controlled for. Model 2 for girls also demonstrated that English-speaking Canadian-born adolescents had nearly 2.5 times higher odds of sexual initiation. Canadian-born boys and girls speaking a heritage language or immigrant boys and girls speaking English at home were as

likely as their same-gender immigrant peers speaking a heritage language at home to have ever had sexual intercourse.

### **Discussion**

Ethnic identity was a significant factor associated with lifetime sexual intercourse in a sample of East Asian adolescents living in BC. When the extent of contact with Canadian culture and East Asian cultures was not taken into account, boys and girls with stronger ethnic identity were 25 - 35% less likely to report that they had ever had sexual intercourse. When the extent of contact that adolescents have had with Canadian culture and their heritage culture was adjusted for, ethnic identity commitment for boys remained statistically significant; exploration was still not a significant factor. For girls, exploration was independently associated with lower odds of ever having sexual intercourse, whereas commitment was no longer a significant predictor. Among both genders, however, the odds ratios for the two components were similar (0.88 for exploration and 0.80 for commitment among boys; 0.71 and 0.80 among girls). This result is not surprising, given the strong correlation between exploration and commitment. Both components of ethnic identity are important factors linked to sexual initiation.

An explanation for the association between ethnic identity and sexual initiation among girls may involve family ethnic socialization. Parents socialize their children about their ethnic heritage through transmission of ethno-cultural values, practices, and knowledge (Hughes et al., 2006). Researchers have found that family ethnic socialization helps to foster child and adolescent ethnic identity, particularly exploration (Juang & Nguyen, 2010; Juang & Syed, 2010; Su & Costigan, 2009; Umaña-Taylor & Guimond, 2010; Umaña-Taylor, Bhanot, & Shin, 2006). Additionally, the effect of family ethnic socialization on ethnic identity has been found to be stronger for girls than for boys (Juang & Syed, 2010; Umaña-Taylor & Guimond, 2010). Because girls and women are generally expected to maintain and pass on cultural traditions

(Phinney, 1990; Suarez-Orozco & Qin, 2006), parents may teach their daughters more about their ethnicity than their sons, which may contribute to higher levels of exploration among girls as reported by this study and others (Juang & Syed, 2010). Generally girls have a closer relationship with their mothers than do boys, thereby having more opportunities to participate in gendered cultural practices such as cooking and preparing for cultural events. East Asian girls who have learned about their ethnic cultures from their parents and explored the meaning of ethnicity may be more likely than their peers with lower levels of exploration to adhere to their cultural values about teen sexual activity. In general, East Asians have conservative sexual norms and values (Chan, 1994; Okazaki, 2002). Higher levels of ethnic identity thus may be associated with lower odds of sexual initiation. However, we do not know with which ethnic or cultural group a respondent identified. Therefore, this explanation may not be applicable to those who identified with a group other than East Asian.

For boys, other socialization agents than parents, such as peers, may be more salient for ethnic identity development (Juang & Syed, 2010). Interactions with same-ethnic peers and community members may help to develop a sense of belonging to one's ethnic group. Strong social and psychological bonds can protect adolescents from risk exposure (Zamboanga, Schwartz, Jarvis, & Van Tyne, 2009).

There are several strengths and limitations in this study. This was the first study to examine the association between sexual behavior and ethnic identity for East Asian teens living in Canada. Analyses of this large-scale, population-based, probability sample produced more stable and reliable results than those of previously reported small, convenience samples. A limitation of the study is that the BC AHS, a school-based survey in English, did not include those who were absent or dropped out, or those who did not speak English. Some recent immigrants in ESL (English as a Second Language) classes may not have completed the survey.



In addition, the BC AHS did not ask which group a participant most identified with; thus we do not know whether sexual initiation was associated with a level of identification with particular ethnocultural group (e.g., Chinese, Korean, or Japanese) or any group. Next, due to the cross-sectional, correlational study design, causal or temporal relationships between variables cannot be inferred. Last, the MEIM-R has only three items for each of the two subscales, limiting its ability to measure each construct.

This study demonstrates the importance of ethnocultural factors in East Asian teens' sexual activity. Although ethnic identity appears to play a role in differentiating sexually experienced and non-sexually experienced boys and girls, the mechanisms underlying the relationship between ethnic identity and sexual initiation may differ by gender. Because of the small number of studies in this area, definite conclusions require further research. However, the findings suggest the need to consider cultural exposure and ethnic identity in future research and practice. For sexual health promotion among East Asian teens, one key may be aiding with adolescents' exploration of their cultures and a group or groups with which they identify, and fostering a sense of belonging to the group(s). Furthermore, at family, school, and community levels, it may be helpful to provide adolescents with positive role models and opportunities to learn about their heritage cultures as well as Canadian culture, and to celebrate ethnocultural diversity.

## **Chapter 6. Project Four: Risk and Protective Factors Associated with Sexual Initiation Among East Asian Adolescents in Canada – Probability Profiles**

### **Introduction**

Sexual initiation is a critical life event, experienced by almost everyone at some point of his or her life. First intercourse during adolescence, unlike substance use, could be seen as part of healthy development, particularly in North America where more than half of adolescents have experienced first sexual intercourse before finishing high school (Centers for Disease Control and Prevention, 2010; Saewyc, Taylor, Homma, & Ogilvie, 2008). Involvement in sexual activity could be an asset that promotes positive personal qualities such as autonomy, confidence, and connectedness; at the same time, it could be a risk (Vrangalova & Savin-Williams, 2011). Unintended pregnancy and sexual transmitted infections (STIs) are two of major negative consequences. In British Columbia (BC), the pregnancy rate was 29.8 per 1,000 girls between the ages of 15 and 19 years in 2005 (Statistics Canada, 2010). The reported chlamydia rate in 2009 was highest among girls of this age group with 1,669 per 100,000 population (Gilbert et al., n.d.). Postponing sexual initiation can bring beneficial outcomes.

Although sexual activity in later adolescence is fairly common and even normative among the general population in North America (Zimmer-Gembeck & Helfand, 2008), this dissertation study showed that this is still not the case among East Asian teens living in BC (see Chapter 3). What differentiates East Asian adolescents who initiated sexual intercourse and those who did not? As reported in Chapter 3 and 5, cultural factors appear to be a significant predictor of being sexually active. But from an ecological perspective, adolescent sexual behavior is expected to be influenced by many other personal or contextual factors in adolescents' lives. Guided by ecological models (e.g., Bronfenbrenner, 1979) and risk-and-protection models (e.g., Blum, McNeely, & Nonnemaker, 2002), this study explored

factors associated with sexual initiation among East Asian adolescents in BC.

The ecological perspective (Bronfenbrenner, 1979; Green, Richard, & Potvin, 1996; Grzywacz & Fuqua, 2000; Jessor & Jessor, 1977; McLeroy, Bibeau, Steckler, & Glanz, 1988; Stokols, 1992) posits a joint effect of person and environmental factors on child and adolescent development. By integrating a risk-and-protection framework (Blum et al., 2002) into the ecological theory, this study assumed that a) East Asian teens' sexual initiation is a function of intrapersonal and environmental factors; and b) protective factors buffer the effects of risk factors on sexual initiation.

The specific aims of this study were a) to identify risk and protective factors associated with sexual initiation among East Asian adolescents in BC, and b) to examine the likelihood of sexual initiation, given a specific set of risk and protective factors; that is, examining the extent to which the presence of multiple protective factors reduces cumulative influence of risk exposure.

Potential risk and protective factors other than cultural factors were selected based on the extensive literature review in Chapter 1. At an individual level, earlier physical maturation has been associated with sexual onset during adolescence (Browning, Leventhal, & Brooks-Gunn, 2004; Dittus & Jaccard, 2000; Marin, Kirby, Hudes, Coyle, & Gomez, 2006; Roche et al., 2005; Siebenbruner, Zimmer-Gembeck, & Egeland, 2007). Adolescents' perceived physical maturation is likely associated with pubertal development. More advanced pubertal development (e.g., earlier menarche) is linked to starting sexual activity at a younger age (Copeland et al., 2010; Kan, Cheng, Landale, & McHale, 2010; Phinney, Jensen, Olsen, & Cundick, 1990). Furthermore, earlier first intercourse among early maturing girls may involve social factors. More physically mature girls are more likely to have older boyfriends (Manlove, Terry-Humen, & Ikramullah, 2006; Marín, Coyle, Gómez, Carvajal, & Kirby, 2000). Compared

to girls with a similar-age partner, those who had an older partner are more likely to engage in sexual intercourse (Gowen, Feldman, Diaz, & Yisrael, 2004; Marín et al., 2000). Early maturing girls may be perceived as a potential sexual partner (Dittus & Jaccard, 2000; Phinney et al., 1990), although they may not have skills to handle pressure from their partner to engage in sexual activity (Short & Rosenthal, 2008).

For some youth, earlier pubertal development may be due to childhood maltreatment such as sexual or physical abuse, as longitudinal studies have identified this association (Foster, Hagan, & Brooks-Gunn, 2008; Wise, Palmer, Rothman, & Rosenberg, 2009). Violence exposure can influence psychosocial and cognitive development through an altered stress-response system (De Bellis, 2001). A sense of powerless and low self-esteem that result from the abuse may cause difficulty in developing and maintaining positive interpersonal relations (Finkelhor & Browne, 1985; Jones et al., 2010; Kendall-Tackett, 2002). In such a case, sex becomes a means for securing affection and intimacy, leading some abused adolescents to have intercourse at a younger age (Browning & Laumann, 1997; Wilson & Widom, 2008). The relationship between a history of sexual or physical abuse and sexual initiation has been empirically shown (Marín et al., 2000; Perkins, Luster, Villarruel, & Small, 1998; Small & Luster, 1994). Penetrative sexual abuse experiences are possibly confounded with ever having sexual intercourse, as pointed out by Senn and colleagues (Senn, Carey, & Venable, 2008). However, some studies showed that women with a history of forced intercourse were more likely to initiate voluntary sexual intercourse at a younger age (Fergusson, Horwood, & Lynskey, 1997; Miller, Monson, & Norton, 1995; Noll, Trickett, & Putnam, 2003; Wilsnack, Vogeltanz, Klassen, & Harris, 1997).

Self-esteem may be a protective factor (Jessor & Jessor, 1977) as a means for promoting healthy decision-making and risk-avoiding behaviors (Goodson, Buhi, & Dunsmore, 2006). But most researchers did not find a significant relationship between self-esteem and

sexual behavior (Goodson et al., 2006). Depressive symptoms may be a risk factor (Longmore, Manning, Giordano, & Rudolph, 2004; Perkins et al., 1998; Smith, 1997). Mental health problems can impede adolescents' psychological, social, and cognitive development, which contributes to impaired self-control, a lack of effective interpersonal skills, and limited capacity to appreciate long-term consequences of their behavior (Wickrama & Wickrama, 2010). Adolescents with psychosocial and cognitive dysfunctions are unlikely to make healthy sexual decisions and may engage in behaviors fueled by emotion alone (Sales, Lang, Hardin, DiClemente, & Wingood, 2010; Seth et al., 2011).

Substance use is a strong correlate or predictor of teen sexual activity (Bersamin, Walker, Fisher, & Grube, 2006; Hahm, Lahiff, & Barreto, 2006; Hellerstedt, Peterson-Hickey, Rhodes, & Garwick, 2006; Hlaing, de la Rosa, & Niyonsenga, 2007; Rink, Tricker, & Harvey, 2007; Siebenbruner et al., 2007). Possible explanations of the association include failure in judgment caused by drinking alcohol. This can increase a likelihood of sexual intercourse with casual partners and involvement in a situation that promotes both alcohol consumption and sexual activity, and one's motivation to satisfy sensation-seeking needs (Brown & Venable, 2007; Nikula, Gissler, Jormanainen, Sevon, & Hemminki, 2009). Additionally, longitudinal studies in the United States (US) have shown that adolescents tended to use alcohol prior to first intercourse (Hahm et al., 2006; Strachman, Impett, Henson, & Pentz, 2009). In their 10-year longitudinal study, Strachman and colleagues (2009) found that earlier onset of alcohol use was associated with an earlier age at first intercourse which in turn, was linked to having the greater number of sexual partners by young adulthood. In contrast, prosocial behavior (e.g., volunteering) is related to being sexually abstinent (Oman, Vesely, Kegler, McLeroy, & Aspy, 2003). Involvement in volunteering may also increase a sense of community social networks. These can be personal assets and social resources to promote healthy behaviors.

Family environment is critical for adolescent sexual development. Adolescents who live with either or neither of their parents are generally at higher risk for ever having sexual intercourse (Laflin, Wang, & Barry, 2008; Roche et al., 2005; Wong, Homma, Johnson, & Saewyc, 2010). A history of suicide attempts or completion by a family member puts adolescents at greater risk of sexual initiation (Resnick et al., 1997). In contrast, a strong sense of connection to family or positive parent-adolescent relationships is a powerful factor for postponing sexual intercourse (Browning et al., 2004; Hahm et al., 2006; Kao, Loveland-Cherry, Guthrie, & Caldwell, 2011; Saewyc et al., 2008). According to the social development model (Catalano & Hawkins, 1996; Catalano, Haggerty, Oesterle, Fleming, & Hawkins, 2004), once adolescents establish strong bonds to socializing agents such as family, school, peers, and community, the social bonds become an informal control that affects adolescents' behavioral choices. Those adolescents who strengthen the bonds to prosocial agents engage in healthy behaviors, and avoid risk behaviors that may result in a loss of the bonds. In contrast, bonds to antisocial agents promote risk behaviors. Adolescents with a strong sense of connection to parents may place a higher value on parental norms about teen sexual activity and comply with parental expectations (Pearson, Muller, & Frisco, 2006). Past research findings (Kao, Guthrie, & Loveland-Cherry, 2007; Kao, Loveland-Cherry, & Guthrie, 2010; Sieving, McNeely, & Blum, 2000) implied the relationships among mother-adolescent connectedness, adolescents' perceived maternal disapproval of teen sex, and adolescents' later onset of intercourse.

School and peer relationships can be a protective or risk factor, as posited by the social development model (Catalano & Hawkins, 1996; Catalano et al., 2004). Feeling connected to school is associated with later onset of sexual intercourse (Bersamin et al., 2006; Hahm et al., 2006; Rink et al., 2007; Small & Luster, 1994). Peer-related risk factors includes adolescents' perceptions of peer permissive attitudes toward teen sexual activity (Bersamin et al., 2006;

Carvajal et al., 1999; DiIorio et al., 2001; Marín et al., 2000) and peer involvement in sexual intercourse (Bersamin et al., 2006; Nahom et al., 2001) and affiliation with peers engaged in risk behaviors (Browning et al., 2004; French & Dishion, 2003; Roche et al., 2005).

To identify risk and protective factors, most past research has used multivariate logistic or linear regressions. While they can examine the unique contribution of each factor in explaining sexual behaviors, they are limited in considering additive and multiplicative risk and protection effects for adolescents who are exposed to more than one risk, but have multiple protective assets or resources. Perkins and colleagues (Perkins et al., 1998) conducted a cumulative risk analysis of the effects of risk factors on sexual initiation among African American, Latino, and European American adolescents. Risk factors included suicidal ideation, higher levels of alcohol use in the past 30 days, being alone at home for 5 or more hours per day, physical abuse histories, sexual abuse histories, lower grade point average, lower levels of religiosity, affiliation with peers engaged in risk behaviors, and negative school climate. Among 14-year-old students who reported all of these risk factors, the probabilities of ever having sexual intercourse were almost 100% (97.2 – 99.8%) for all three ethnic groups. On the other hand, among 14-year-old students in an advantage or low-risk category (e.g., no history of physical or sexual abuse, lack of recent alcohol use, positive school climate), the probabilities ranged from 5.6% for European American girls to 56.2% for African American boys. Perkins and colleagues, however, did not report probabilities based on combinations of risk and protective factors other than the best case scenario (with no risk factor and all protective factors) and the worst case scenario (with all risk factors and no protective factor), or include Asians. This study reported probabilities of sexual initiation for all possible combinations of top three risks and top 3 protections among East Asian adolescents.

## Methods

### Sample

This study was a secondary analysis of cross-sectional data from the 2008 British Columbia Adolescent Health Survey (BC AHS), using 4,311 students in grades 7 through 12, who marked 'East Asian' as their cultural or ethnic background. More details on the survey procedure and the study sample can be found in Chapter 2.

### Measures

#### **Dependent variables**

##### *Sexual initiation*

Students were considered sexually active if they reported ever having sexual intercourse and/or indicated involvement in sexual intercourse.

#### **Individual-level risk factors**

##### *Perceived physical maturation*

This variable was created using one item asking, "Compared to most youth your age, do you think you look younger, older or about the same age?" and dichotomized into a) younger or about the same age and b) older.

##### *Emotional distress*

Emotional distress was measured by three items that assessed a level of anxiety or depressive symptoms in the past 30 days (e.g., "During the past 30 days, have you felt so sad, discouraged, hopeless or had so many problems that you wondered if anything was worthwhile?"). Each item was rated on a 5-point scale where higher scores indicated higher levels of distress. Internal consistency reliability measured by Cronbach's alpha was 0.76 for both boys and girls.

##### *Lifetime alcohol use*



Of substance use experience, lifetime alcohol use (yes or no) was selected based on a preliminary analysis of age at first use of substances and first intercourse. The BC AHS asked students who reported that they had ever used alcohol, marijuana, and cigarettes about age of first use of each substance. Response options were: a) less than 9 years old, b) 9 or 10 years old, c) 11 or 12 years old, d) 13 or 14 years old, e) 15 or 16 years old, and f) 17 or more years old. Students who reported lifetime sexual intercourse were asked about age of first intercourse. Response options were: a) less than 12 years old, b) 12 years old, c) 13 years old, d) 14 years old, e) 15 years old, f) 16 years old, and g) 17 or more years old. To explore which, substance use or sexual intercourse, occurred earlier, age of first substance use was subtracted from age of first intercourse. Age at first use of alcohol, marijuana, and cigarettes was coded by using the median point (e.g., “13 or 14 years old” was coded as 13.5). Students were categorized as “alcohol first” or “sex first” if their scores were larger than  $|0.5|$ . Students were categorized as “about the same age” if their scores were between -0.5 and 0.5. Categories of “alcohol only” and “sex only” included those who initiated either, but not both.

As summarized in Table 6.1, among students who reported lifetime alcohol use or sexual intercourse, approximately 90% reported drinking alcohol earlier than first intercourse, or ever having alcohol but not intercourse. On the other hand, while more boys were categorized as “marijuana first” or “marijuana only” than “sex first” or “sex only”, similar proportions of girls were classified as “marijuana first” or “marijuana only,” and “sex first” or “sex only.” Of three types of substances, alcohol use most likely occurred prior to first intercourse; therefore, this variable was chosen as a risk factor. The BC AHS defined a drink of alcohol as equal to drinking a regular bottle of beer (12oz), a medium glass of wine (5oz), or a shot of liquor (1.5oz), not including a few sips.

**Table 6.1. Timing of First Substance Use and Sexual Intercourse**

	(Weighted N)	Substance use first or only (%)		About the same age (%)		Sexual intercourse first or only (%)	
<b>Boys</b>							
Alcohol	(7,739)	90.3	[87.9, 92.4]	3.5	[2.3, 5.4]	6.2	[4.6, 8.3]
Marijuana	(3,440)	59.3	[52.9, 65.3]	8.5	[5.5, 12.7]	32.3	[26.9, 38.1]
Cigarettes	(4,272)	68.4	[62.9, 73.5]	5.1	[3.2, 8.1]	26.5	[21.9, 31.6]
<b>Girls</b>							
Alcohol	(8,862)	88.4	[85.7, 90.6]	4.6	[3.3, 6.4]	7.0	[5.3, 9.2]
Marijuana	(3,574)	43.3	[37.6, 49.1]	7.5	[4.9, 11.2]	49.3	[43.4, 55.2]
Cigarettes	(4,352)	61.9	[56.2, 67.3]	4.9	[3.0, 7.8]	33.2	[28.4, 38.3]

*Note.* 95% confidence intervals are in brackets.

### ***Sexual abuse histories***

Students were counted as sexually abused if they endorsed either or both of two questions asking whether they have ever been sexually abused or whether they have ever been forced to have sexual intercourse when they did not want to. The BC AHS defined sexual abuse as “when anyone including a family member touches you in a place you did not want to be touched or does something to you sexually which you did not want”; thus, sexual abuse included both penetrative and non-penetrative abuse.

### ***Physical abuse histories***

Students who reported ever having been physically abused or mistreated by anyone in their family or by anyone else were considered those with physical abuse histories.

### ***Racial discrimination***

One question asked if in the past 12 months, adolescents had been discriminated against or treated unfairly because of their race or skin color. The response options were yes and no.

### **Individual-level protective factors**

#### ***Self-esteem***

Self-esteem was measured with a 7-item Self-esteem scale. The scale was used in the

Minnesota Student Survey and originally adapted from the 10-item Rosenberg Self-esteem Scale (Rosenberg, 1989) that has been widely used with adolescent populations. Each of the seven items was rated on a 4-point Likert-type scale; negatively worded items were reverse-coded so that higher scores indicated higher self-esteem. A score was calculated by averaging the seven items. Cronbach's coefficient alphas in this sample were 0.84 for boys and 0.87 for girls.

### ***Prosocial behavior***

Weekly volunteer commitment was used. Students were asked to report the frequency of involvement in volunteering in the past 12 months. Volunteering one or more times a week was considered weekly commitment.

### **Family risk factors**

#### ***Living arrangement***

Living with one or two parents was coded as 0; not living with parent(s) as 1. East Asian adolescents who reported living with one parent and their peers living in a two-parent household did not differ in the likelihood of ever having sexual intercourse.

#### ***Family suicide histories***

A history of suicide in the family was assessed by asking if students have someone in their family who had ever attempted or committed suicide. Students with family suicide histories included those who marked "Yes, within the past year," "Yes, more than a year ago," or both responses.

### **Family protective factors**

#### ***Family connectedness***

A family connectedness scale had 11 items asking the degree of feeling cared about by or connected to parents or family members. Students responded on a 5-point scale (not at all, very little, somewhat, quite a bit, very much) to the following questions: a) How close do you

feel to your mother (or the person you consider to be your mother)? b) How much do you think your mother (or the person you consider to be your mother) cares about you? c) How close do you feel to your father (or the person you consider to be your father)? and d) How much do you think your father (or the person you consider to be your father) cares about you? In addition, using a 3-point scale (often or very true, sometimes or somewhat true, never or not true), the following questions were asked: e) Most of the time, my mother (or the person I consider to be my mother) is warm and loving toward me, f) Overall, I am satisfied with my relationship with my mother (or the person I consider to be my mother), g) Most of the time, my father (or the person I consider to be my father) is warm and loving toward me, and h) Overall, I am satisfied with my relationship with my father (or the person I consider to be my father). Students were also asked respond on a 3-point scale (not at all, some, a lot) to the three questions about family: i) How much do you feel that people in your family understand you? j) How much do you feel that you and your family have fun together, and k) How much do you feel that your family pays attention to you? With regard to the questions asking about mother or father, the option of “Don’t know or does not apply” was provided, and this option was coded as missing. Higher scores indicated higher family connectedness. Cronbach’s alphas were 0.88 for boys and also for girls.

### **School and peer risk factors**

#### ***Victimization at school***

The BC AHS asked about the frequency of experiencing three types of school bullying in the past 12 months: a) verbal insults (“Tease you or say something personal about you that made you feel bad or extremely uncomfortable”), b) social ostracism (“Keep you out of things on purpose, exclude you from their group of friends or completely ignore you?”), and c) physical assault (“Physically attack or assault you?”). Verbal insults and social ostracism were

combined as non-physical victimization. The response options were dichotomized into yes (once or 2 or more times) and no (never).

### ***Lack of perceived school safety***

Students' perceptions of safety at school were measured by items asking about the frequency (always, sometimes, rarely/never) of feeling safe in six different places in school; a) classroom, b) washrooms, c) hallways, d) library, e) cafeteria, and f) outside on school property during school hours. A score was calculated by averaging these six item responses. Higher scores indicated lower levels of perceived safety. Cronbach's alphas were 0.90 for boys and 0.88 for girls.

### **School and peer protective factors**

#### ***School connectedness***

A school connectedness scale was created from six items reflecting as a sense of belonging to school and feeling cared about by school people. The items include 1) How much do you feel that our teachers care about you? 2) Since school started this year, how often have you had trouble getting along with your teachers? 3) How much do you agree or disagree with the following statements?; a) I feel like I am part of my school, b) I am happy to be at my school, c) The teachers at my school treat me fairly, and d) I feel safe at my school. All items were rated on a 5-point scale. A score was a mean of the item scores with higher scores indicating higher school connectedness.

Previous confirmatory factor analyses using the 2003 BC AHS indicated that the school connected scale consists of two factors: a) Teacher Caring (teachers care about you, teachers treat you fairly, and you get along with teachers) and b) School Belonging (feeling part of school, being happy to be at school, and feeling safe at school) (MacKay, 2007). Furthermore, the scale was invariant across East Asian student groups varying in length of stay in Canada

(Homma, Saewyc, & Zumbo, 2011). Because of the high correlation between the two factors ( $r = 0.79$ ), mean total scores of six items were used. Cronbach's alphas were 0.81 for boys and 0.83 for girls.

### ***Perceived peer attitudes toward teen pregnancy***

Adolescents were asked if their friends would be upset with them if they got pregnant or got someone else pregnant. The response options were yes and no

### **Culture (risk) factors**

#### ***Cultural exposure***

Temporal and linguistic exposure to Canadian and East Asian cultures was measured by two questions: a) length of stay in Canada and b) language spoken at home. Students were categorized into four different groups: a) those having lived in Canada for less than 2 years, between 2 and 5 years, between 6 and 10 years, or more than 10 years but not all their lives (for convenience, these students are referred to as immigrants) and speaking a heritage language at home; b) immigrants speaking English at home; c) those having lived in Canada all their lives (for convenience, these students are referred to as Canadian-born) and speaking a heritage language at home; and d) Canadian-born speaking English at home.

### **Culture protective factors**

#### ***Ethnic identity***

Ethnic identity was measured by a modified version of the Multigroup Ethnic Identity Measure – Revised (MEIM–R; Phinney & Ong, 2007). The scale consisted of three items to assess *ethnic identity exploration* (exploring one's ethnic group membership) and three items to assess *ethnic identity commitment* (a sense of belonging and commitment to one's ethnic group). In this study, a total score of ethnic identity, rather than two subscale scores, was used for two reasons: a) the two factors were highly correlated ( $r = 0.85$ ) and b) odds ratios for ever having

sexual intercourse were similar when each subscale score were entered in a separate model (see Chapter 5). Cronbach's alphas were 0.85 for both boys and girls. More detailed information on the measure is available in Chapter 4.

All scale scores (emotional distress, self-esteem, family connectedness, perceived school safety, school connectedness, and ethnic identity) were created by averaging responses after item scores were rescaled to 0 to 1.

### **Analysis**

The Complex Sample module of SPSS 18.0 was used for all analyses of complex sampling survey data. All analyses were also conducted separately by gender because of potential gender differences in factors associated with sexual activity (e.g., Hahm et al., 2006).

First, for descriptive purpose, univariate analyses were performed for variables of proposed risk and protective factors. Then, to examine the extent to which presence of multiple protective factors reduce cumulative influence of risk exposure, probabilities of ever having sexual intercourse were calculated. Probability profiling analyses have been conducted in various studies such as suicidal behavior among adolescents (Rubenstein, Heeren, Housman, & Rubin, 1989), violence perpetration among American Indian youth (Bearinger et al., 2005), and suicide attempt among American Indian youth (Pettingell et al., 2008). The current study followed approaches employed by these studies. Probabilities are computed by using *b* weights of variables obtained from a multivariate logistic regression model.

The first step of probability profiles involved bivariate logistic regressions, including each proposed risk or protective factor and the dependent variable of sexual initiation along with age as a covariate. Variables entered in subsequent multivariate models were selected if a) they achieved a statistically significant level of  $p < 0.05$ , and b) had an odds ratio (OR) of less than 0.50 for a protective factor or greater than 2.00 for a risk factor, which were considered

practically meaningful (Bearinger et al., 2005). Then, selected risk and protective factors (and age as a covariate) were entered into two separate multivariate logistic regression models; a) risk factors only and b) protective factors only. Of those, factors that were considered statistically significant ( $p < 0.05$ ) and practically significant (OR  $< 0.50$  for a protective factor or  $> 2.00$  for a risk factor) were eligible for a final multivariate model. As described above, all continuous variables were scaled to scores between 0 and 1 so that the magnitude of odds ratios would be comparable across scales and dichotomous items (Bearinger et al., 2005; Pettingell et al., 2008)

To form probability profiles, coefficients of variables from the final multivariate model with both risk and protective factors, and age were entered in the following equation:

$$p = \frac{1}{1 + \exp(-bx)}$$

where  $p$  = probability of ever having sexual intercourse

$bx$  = constant + coefficient<sub>1</sub> (variable<sub>1</sub>) + coefficient<sub>2</sub> (variable<sub>2</sub>) + ... + coefficient<sub>k</sub>(variable<sub>k</sub>)

When risk or protective factors were not present, scores reflecting the 10th percentile for continuous variables or zero for dichotomous variables were entered in the equation. When risk or protective factors were present, scores reflecting the 90th percentile for continuous variables or one for dichotomous variables were entered. Likelihood of ever having sexual intercourse was estimated for all possible combinations of risk and protective factors.

## Results

### Descriptive Analysis of Potential Risk and Protective Factors

Descriptive findings provided an overall picture of East Asian adolescents in this study and their lives. Table 6.2 summarizes descriptive statistics. Overall, East Asian students reported high self-esteem and low emotional distress in the past 30 days. More than one in ten boys and girls experienced physical abuse. About 5% of boys and 12% of girls reported a history of



sexual abuse. Lifetime alcohol use was not prevalent; about two in three had never had alcohol. A minority of East Asian students did not live with one or both parents, or had a family member who had ever attempted or committed suicide. Most students felt connected to their families. At school, non-physical victimization appeared to be common: more than one in three boys and nearly half of girls experienced being teased or excluded during the past 12 months. On the other hand, physical victimization at school was not prevalent, with 9% of boys and 4% of girls reporting that they had been physically attacked by another youth in the past 12 months. In general, students felt safe at school and connected to school. About 66% of boys and 82% of girls believed that their friends would be upset if they got pregnant or got someone pregnant. East Asian adolescents demonstrated moderate to high levels of involvement with and committed to their ethnic groups. In this sample, the largest group was immigrants whose primary home language was not English, followed by Canadian-born students who reported primarily speaking English at home.

**Table 6.2. Descriptive Statistics of Risk and Protective Factors**

(weighted N)	Boys (21,890)	Girls (25,107)
<b>Individual-level</b>		
Weekly volunteering involvement (%)	25.1	33.6
Self-esteem <sup>a</sup> (mean)	0.76	0.71
Look older (%)	21.0	23.0
Racial discrimination in past 12 months (%)	18.8	17.2
Ever been physically abused (%)	14.3	16.1
Ever been sexually abused (%)	4.4	11.4
Emotional distress in past 30 days <sup>a</sup> (mean)	0.30	0.38
Ever used alcohol (%)	34.5	34.8
<b>Family</b>		
Family connectedness <sup>a</sup> (mean)	0.79	0.78
Not living with parent(s) (%)	8.0	6.8
Family ever attempted or completed suicide (%)	6.1	9.3
<b>School and Peer</b>		
School connectedness <sup>a</sup> (mean)	0.69	0.70
Friends would be upset with teen pregnancy (%)	65.9	82.3
Felt less safe at school <sup>a</sup> (mean)	0.19	0.21
Teased or excluded in past 12 months (%)	37.6	46.0
Physically attacked in past 12 months (%)	9.1	3.9
<b>Culture</b>		
Ethnic identity <sup>a</sup> (mean)	0.63	0.63
Cultural exposure (%)		
Immigrants, speaking a heritage language at home	40.1	40.9
Canadian-born, speaking a heritage language at home	11.3	13.5
Immigrants, speaking English at home	18.1	14.8
Canadian-born, speaking English at home	30.5	30.7

<sup>a</sup> Possible score range for each scale is 0 to 1.

## Probability Profiling Analysis

### *Step 1: Bivariate analysis of potential risk and protective factors*

Table 6.3 presents age-adjusted ORs with 95% confidence intervals from bivariate analyses of proposed protective factors. For both genders, higher levels of family connectedness, school connectedness, and ethnic identity were significantly associated with lower odds of being sexually active. All of the ORs were greater than 2; thus, the three variables were entered in the subsequent multivariate models. Weekly volunteer involvement, self-esteem, or perceived peer

attitudes about teen pregnancy were not significant factors.

**Table 6.3. Bivariate Logistic Regression Analysis of Protective Factors Associated with Sexual Initiation**

	Boys		Girls	
	OR <sup>a</sup>	95% CI	OR <sup>a</sup>	95% CI
<b>Individual-level</b>				
Weekly volunteering involvement	1.11	[0.76, 1.62]	0.70	[0.48, 1.02]
Self-esteem	0.45	[0.19, 1.05]	0.85	[0.42, 1.72]
<b>Family</b>				
Family connectedness	<b>0.16***</b>	[0.07, 0.37]	<b>0.09***</b>	[0.04, 0.20]
<b>School and Peer</b>				
School connectedness	<b>0.02***</b>	[0.01, 0.06]	<b>0.08***</b>	[0.03, 0.22]
Friends would be upset with teen pregnancy	0.93	[0.64, 1.37]	0.71	[0.48, 1.06]
<b>Culture</b>				
Ethnic identity	<b>0.31*</b>	[0.12, 0.81]	<b>0.17***</b>	[0.07, 0.43]

Note. OR = odds ratio; CI = confidence interval; ORs < 0.5 are in bold.

<sup>a</sup> Adjusted for age

\*  $p < 0.05$ . \*\*  $p < 0.01$ . \*\*\*  $p < 0.001$ .

As presented in Table 6.4, sexually active boys were more likely than non-active boys to think that they look older compared to most youth their age, to have a higher level of emotional distress in the past 30 days, and to have ever used alcohol. Sexually active boys were more likely to experience violence toward them, such as racial discrimination, sexual abuse, and physical and non-physical victimization at school. Both not living with parent(s) and family suicide histories were significant risk factors. Sexually active boys felt less safety at school than non-active boys. Of those risk factors, the ORs for looking older and non-physical victimization were less than 2; thus, they were not entered in the multivariate analysis. Compared with immigrant boys who spoke a language other than English at home, immigrant and Canadian-born boys speaking English at home were more likely to have ever had sexual intercourse. But the ORs were less than 2.

**Table 6.4. Bivariate Logistic Regression Analysis of Risk Factors Associated with Sexual Initiation**

	Boys		Girls	
	OR <sup>a</sup>	95% CI	OR <sup>a</sup>	95% CI
<b>Individual-level</b>				
Look older	1.75**	[1.23, 2.51]	<b>3.73***</b>	[2.67, 5.21]
Racial discrimination in past 12 months	<b>2.46***</b>	[1.71, 3.54]	1.36	[0.91, 2.05]
Ever been physically abused	1.48	[0.93, 2.37]	<b>2.45***</b>	[1.63, 3.69]
Ever been sexually abused	<b>6.65***</b>	[3.64, 12.16]	<b>6.85***</b>	[4.61, 10.18]
Emotional distress in past 30 days	<b>5.26***</b>	[2.65, 10.47]	<b>2.92**</b>	[1.51, 5.65]
Ever used alcohol	<b>10.00***</b>	[6.09, 16.43]	<b>14.43***</b>	[8.69, 23.96]
<b>Family</b>				
Not living with parent(s)	<b>2.26**</b>	[1.42, 3.60]	1.74*	[1.06, 2.85]
Family ever attempted or completed suicide	<b>3.26***</b>	[1.99, 5.35]	<b>2.14**</b>	[1.34, 3.39]
<b>School and Peer</b>				
Felt less safe at school	<b>2.61*</b>	[1.26, 5.39]	1.45	[0.70, 2.99]
Teased or excluded in past 12 months	1.46*	[1.02, 2.07]	1.53*	[1.09, 2.14]
Physically attacked in past 12 months	<b>2.99***</b>	[1.81, 4.95]	<b>4.70***</b>	[2.56, 8.64]
<b>Culture</b>				
Cultural exposure				
Immigrants, speaking a heritage language at home	1.00		1.00	
Canadian-born speaking a heritage language at home	1.43	[0.77, 2.65]	0.98	[0.48, 1.99]
Immigrants speaking English at home	1.65*	[1.03, 2.62]	1.73*	[1.07, 2.79]
Canadian-born speaking English at home	1.82**	[1.20, 2.76]	<b>2.58***</b>	[1.71, 3.88]

Note. OR = odds ratio; CI = confidence interval; ORs > 2.0 are in bold.

<sup>a</sup> Adjusted for age.

\*  $p < 0.05$ . \*\*  $p < 0.01$ . \*\*\*  $p < 0.001$ .

Among girls, significant risk factors included looking older, physical abuse histories, sexual abuse histories, emotional distress in the past 30 days, lifetime alcohol use, family suicide histories, physical victimization at school in the past 12 months, and greater exposure to Canadian culture (Canadian-born and speaking English at home). Although not living with parent(s) and non-physical victimization at school in the past 12 months were statistically significantly associated with being sexually active, the ORs were less than 2. Those findings are

presented in Table 6.4.

***Step 2: Separate multivariate analysis of risk and protective factors***

Next, multivariate logistic regression analyses were conducted separately for risk and protective factors. Age and variables with significant bivariate associations with the outcome were simultaneously entered in the model. Table 6.5 shows the results. Among boys, school connectedness was a significant protective factor. Among girls, all three protective factors (family connectedness, school connectedness, and ethnic identity) were independently associated with sexual initiation.

Significant risk factors for boys were racial discrimination, sexual abuse histories, emotional distress, lifetime alcohol use, and not living with parent(s). Of those, the top three strong factors included sexual abuse histories, lifetime alcohol use, and emotional distress. Among girls, lifetime alcohol use, sexual abuse histories, and looking older were the top three significant risk factors. Canadian-born girls who spoke English at home were more likely than immigrants speaking a heritage language at home to be sexually active; but the OR was less than 2. The results of Step 1 and 2 are summarized in Figure 6.1 for boys and Figure 6.2 for girls.

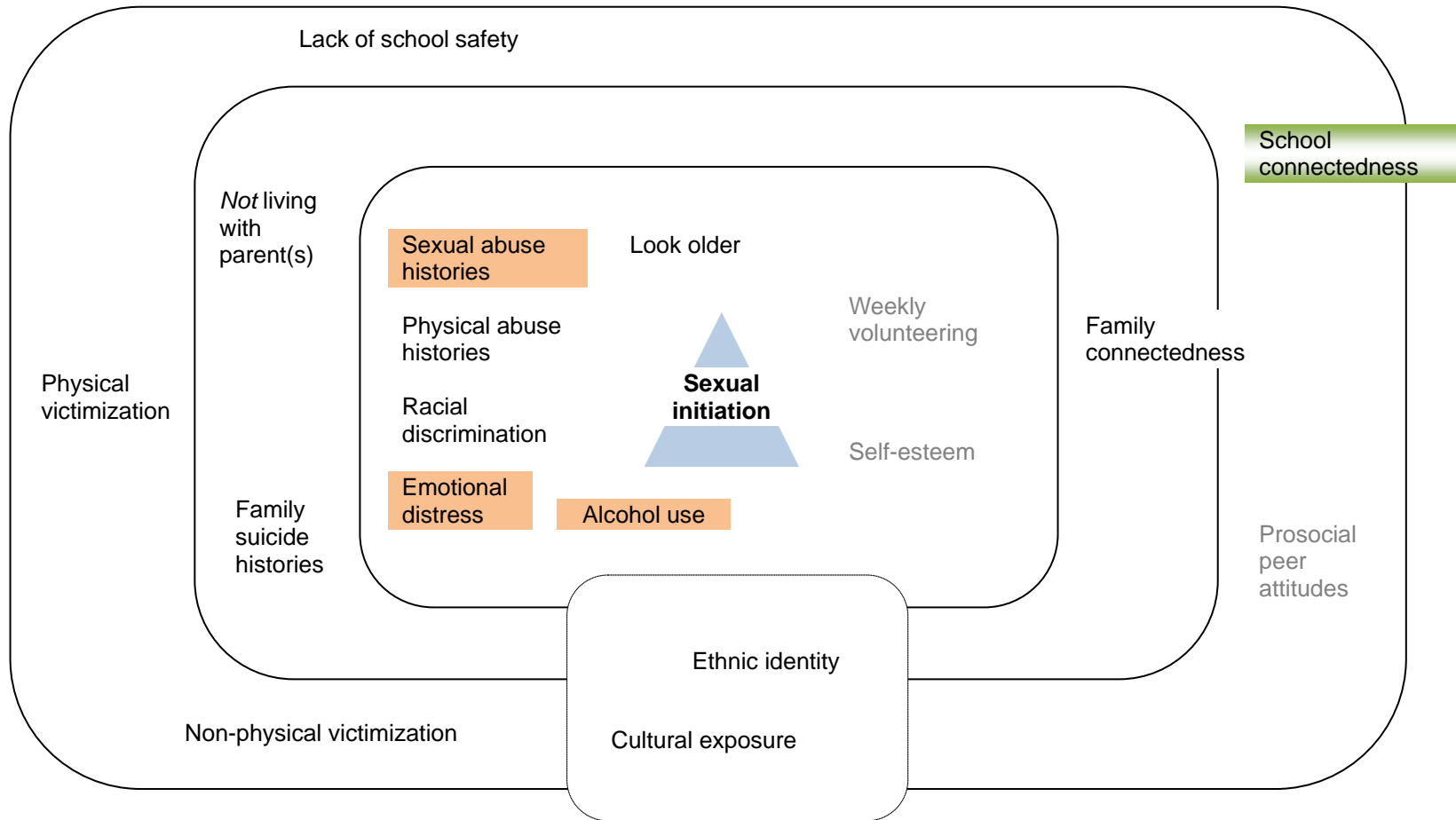
**Table 6.5. Separate Multivariate Logistic Regression Analysis of Risk and Protective Factors Associated with Sexual Initiation**

	Boys		Girls	
	OR <sup>a</sup>	95% CI	OR <sup>a</sup>	95% CI
<b>Protective Factors</b>				
Family connectedness	0.65	[0.27, 1.60]	<b>0.17***</b>	[0.07, 0.37]
School connectedness	<b>0.03***</b>	[0.01, 0.08]	<b>0.21**</b>	[0.07, 0.58]
Ethnic identity	0.65	[0.24, 1.73]	<b>0.36*</b>	[0.14, 0.90]
<b>Risk Factors</b>				
Look older	...	...	<b>2.39***</b>	[1.61, 3.56]
Racial discrimination in past 12 months	1.62*	[1.05, 2.50]	...	...
Ever been physically abused	...	...	1.46	[0.93, 2.32]
Ever been sexually abused	<b>3.06**</b>	[1.46, 6.42]	<b>4.47***</b>	[2.67, 7.47]
Emotional distress in past 30 days	<b>2.50*</b>	[1.08, 5.83]	0.61	[0.27, 1.37]
Ever used alcohol	<b>8.66***</b>	[5.01, 14.96]	<b>10.06***</b>	[5.79, 17.48]
Not living with parent(s)	2.14*	[1.18, 3.86]	...	...
Family ever attempted or completed suicide	1.59	[0.89, 2.86]	0.85	[0.51, 1.41]
Felt less safe at school	1.52	[0.59, 3.92]	...	...
Physically attacked in past 12 months	1.08	[0.56, 2.09]	2.13	[0.83, 5.48]
Cultural exposure				
Immigrants speaking a heritage language at home	...	...	1.00	
Canadian-born speaking a heritage language at home	...	...	0.88	[0.40, 1.95]
Immigrants speaking English at home	...	...	1.19	[0.68, 2.06]
Canadian-born speaking English at home	...	...	1.82*	[1.13, 2.95]

Note. OR = odds ratio; CI = confidence interval; ORs < 0.5 for protective factors or > 2.0 for risk factors are in bold

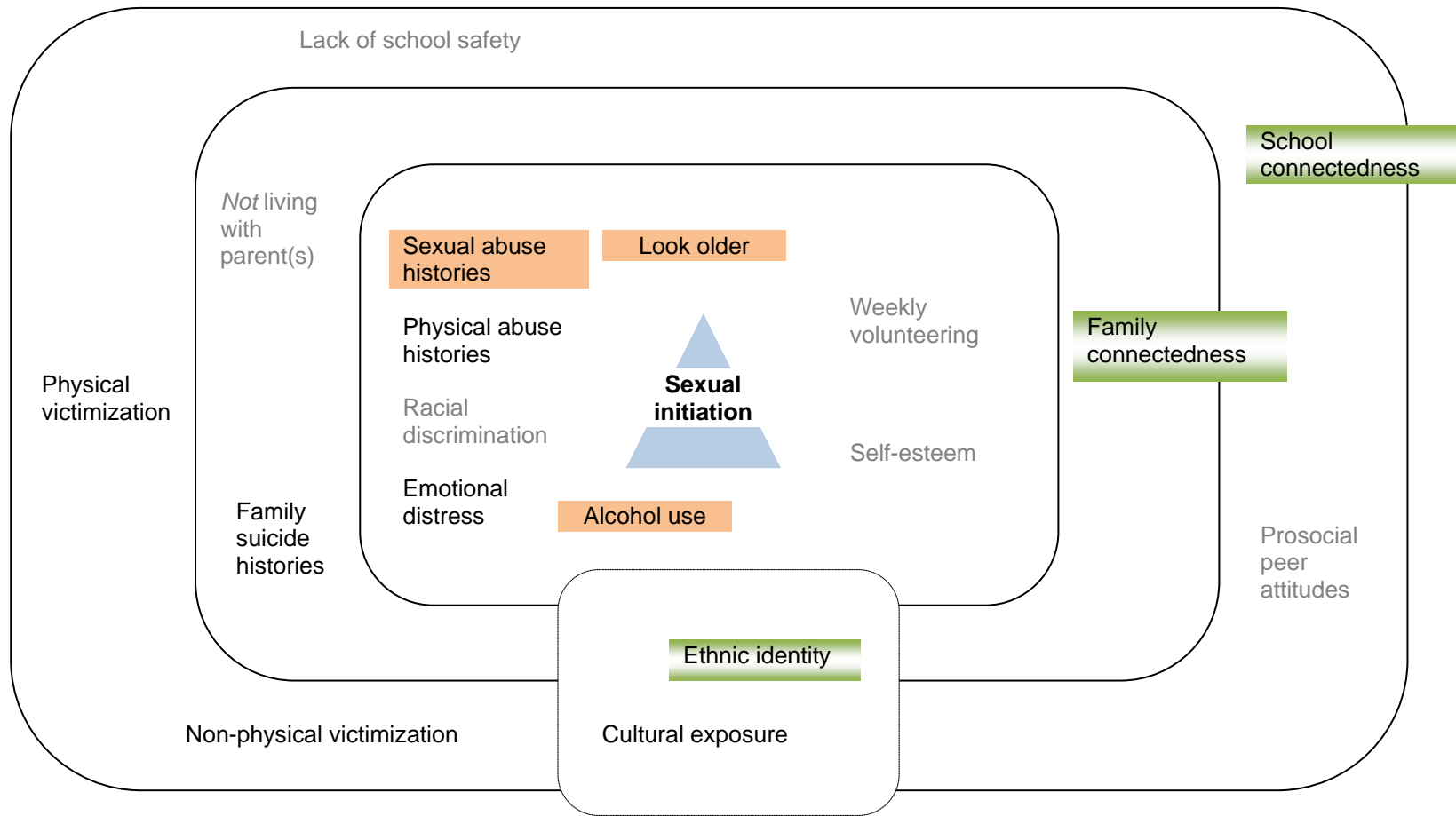
<sup>a</sup> Adjusted for age.

\*  $p < 0.05$ . \*\*  $p < 0.01$ . \*\*\*  $p < 0.001$ .



**Figure 6.1. Factors Associated with Sexual Initiation Among Boys**

Factor	Not significant in a bivariate model	Factor	Significant in a bivariate model
Factor	Top protective factor	Factor	Top 3 risk factors



**Figure 6.2. Factors Associated with Sexual Initiation Among Girls**

Factor	Not significant in a bivariate model	Factor	Significant in a bivariate model
<b>Factor</b>	Top 3 protective factors	<b>Factor</b>	Top 3 risk factors



**Step 3 & 4: Final multivariate analysis of risk and protective factors and probability profiles**

The final logistic regression model for boys included school connectedness as a protective factor, and sexual abuse histories, emotional distress, and lifetime alcohol use as risk factors (Table 6.6). Among girls, the final model included family connectedness, school connectedness, and ethnic identity as protective factors, and looking older, sexual abuse histories, and lifetime alcohol use as risk factors (Table 6.7).

**Table 6.6. Final Multivariate Logistic Regression Model of Risk and Protective Factors Associated with Sexual Initiation Among Boys**

	B	OR	95% CI
Intercept	-7.446	...	
Age	0.335	1.40	[1.24, 1.57]
School connectedness	-2.809	0.06	[0.02, 0.19]
Ever been sexually abused	1.211	3.36	[1.76, 6.41]
Emotional distress in past 30 days	0.629	1.88	[0.93, 3.80]
Ever used alcohol	2.176	8.81	[5.15, 15.05]

*Note.* OR = odds ratio; CI = confidence interval

**Table 6.7. Final Multivariate Logistic Regression Model of Risk and Protective Factors Associated with Sexual Initiation Among Girls**

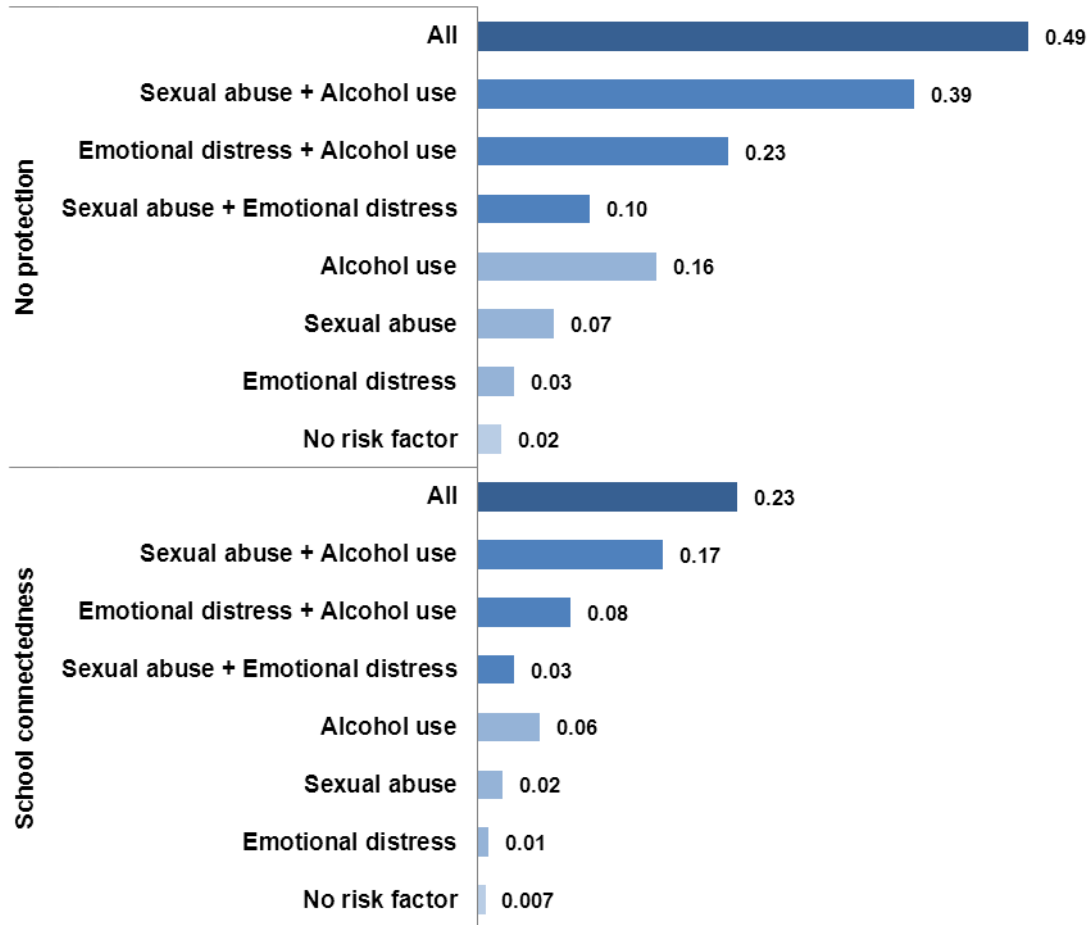
	B	OR	95% CI
Intercept	-10.763	...	
Age	0.521	1.68	[1.47, 1.93]
Family connectedness	-1.441	0.24	[0.09, 0.62]
School connectedness	-0.320	0.73	[0.20, 2.69]
Ethnic identity	-0.820	0.44	[0.16, 1.19]
Look older	0.763	2.14	[1.44, 3.18]
Ever been sexually abused	1.409	4.09	[2.56, 6.53]
Ever used alcohol	2.358	10.57	[6.15, 18.15]

*Note.* OR = odds ratio; CI = confidence interval

Using *b* coefficients from the final multivariate models, predicted probabilities of ever having sexual intercourse were computed and are presented in Figure 6.1 and Figure 6.2 for

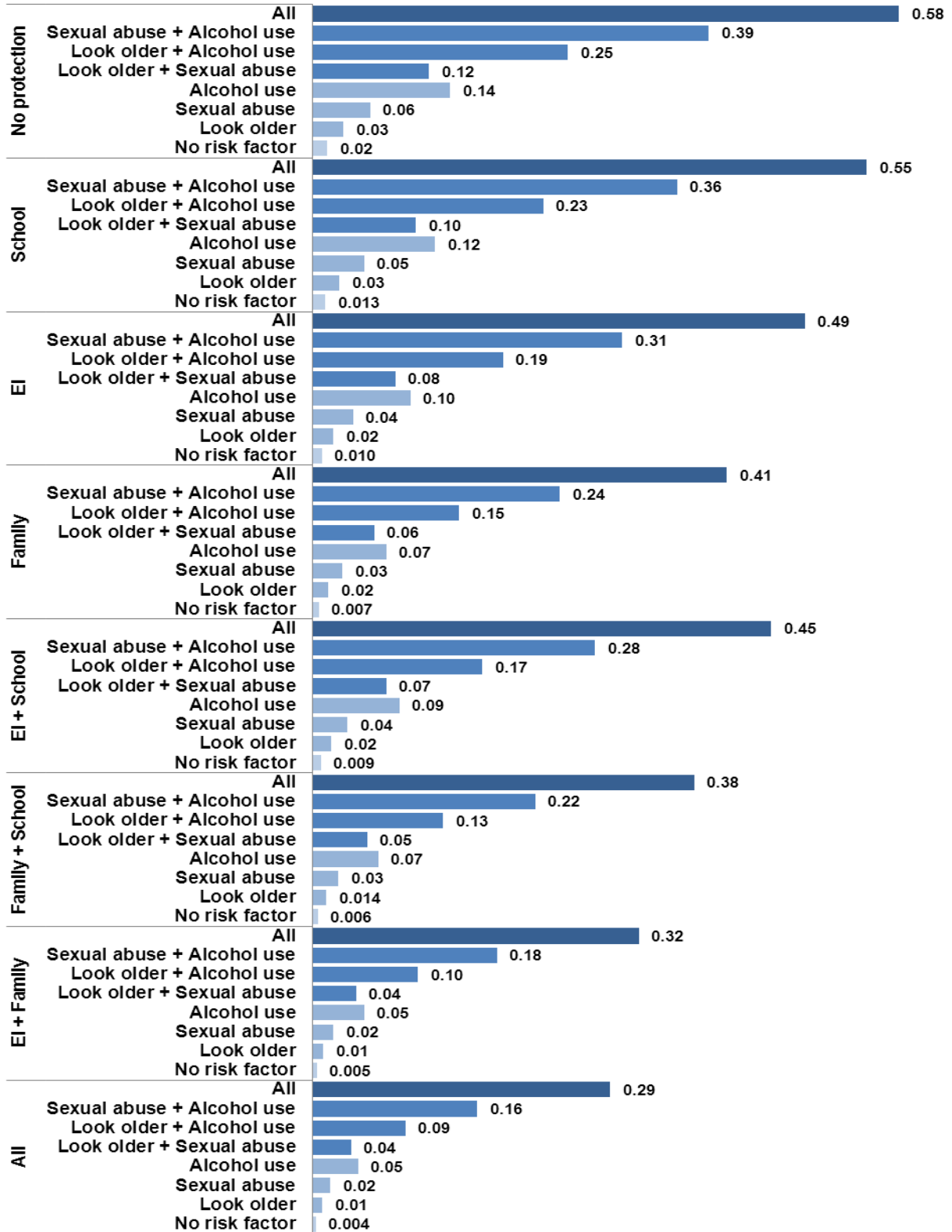
boys and girls, respectively. Those probabilities were calculated for students aged 15 (a mean age of the sample). Therefore, the probabilities were higher among students older than 15 and lower among students younger than 15 than those among 15 year-olds.

Among 15-year-old boys with a low level of school connectedness, a history of sexual abuse, lifetime alcohol use, and a high level of emotional distress, the probability of being sexually active was 49% (Figure 6.3). The probability declined with fewer numbers of risk factors present even when a strong protective factor was absent. The probability varied from 39% with two risk factors of lifetime alcohol abuse and sexual abuse histories, to 2% with no risk factor present. An addition of one protective factor (school connectedness) reduced the probability by half. For example, among boys characterized by three risk factors, the estimated likelihood of sexual initiation was 49% with no protective factor and 23% with a high level of school connectedness present. With no risk factor and one protective factor present, the probability was the lowest, 0.7%.



**Figure 6.3. Probability Profiles of Sexual Initiation Among Boys Aged 15**

Among 15-year-old girls characterized by all three risk factors (sexual abuse histories, looking older, and lifetime alcohol use), the likelihood of being sexually active was 58% with none of three protective factors present (Figure 6.4). When all three risk factors along with one protective factor (family connectedness, school connectedness, or ethnic identity) were present, the probability decreased but not substantially (41% - 55%). As the number of protective factors was increased to two, the probability ranged from 32% to 45% when all risk factors were present. With all three protective factors present, the estimated likelihood of ever having sexual intercourse decreased by half (29%). The presence of risk factors appeared to have a great influence on the predicted probability of being sexually active. Even for girls who had a low level of all protective factors, their probability was 2% when risk factors were absent, that is, those girls have never had alcohol, never been sexually abused, and thought that they look younger or about the same age compared to most youth their age. If a girl had no risk factor and three protective factors, there was only a 0.4% chance that she would be in a sexually active group.



**Figure 6.4. Probability Profiles of Sexual Initiation Among Girls Aged 15**

*Note.* School = School connectedness; EI = Ethnic identity; Family = Family connectedness

## Discussion

A number of researchers have identified risk and protective factors that may promote or prevent sexual initiation and risky sexual behaviors during adolescence. Nevertheless, only a few focused on Asian adolescents in North America. This was the first study to predict the likelihood of sexual initiation given various combinations of risk and protective factors among East Asian adolescents in Canada. For both boys and girls, the presence of multiple protective factors substantially reduced the probability of being sexually active even when multiple risk factors were present.

### Risk and Protective Factors

Lifetime alcohol use was a strong risk factor entered in final logistic regression models for both genders. The association between substance use and sexual activity has been well supported in the literature. However, a difference is that previous researchers used a higher level of substance use, as opposed to a broader criterion in this study, which is whether or not ever having had a drink of alcohol other than a few sips. In their study of American Indian teens, Hellerstedt and colleagues (Hellerstedt et al., 2006) found that alcohol use in the past 30 days was associated with ever having sexual intercourse only for older girls whereas binge drinking in the past 2 weeks was a significant predictor for younger girls and both younger and older boys. Hahm and colleagues (Hahm et al., 2006) found the strong association between binge drinking and sexual initiation only for Asian American girls, but not for Asian American boys. In contrast, the less stringent criterion for alcohol use in the present study distinguished between sexually active youth and non-active youth across genders. This may be related to the low prevalence of lifetime alcohol use among the sample in this study.

Sexual abuse histories are another well-known factor that increases risks for involvement in risk sexual behaviors (Arriola, Loudon, Doldren, & Fortenberry, 2005; Francisco

et al., 2008; Lalor & McElvaney, 2010; Noll, Shenk, & Putnam, 2009; Oddone Paolucci, Genuis, & Violato, 2001). The current study findings suggest the importance of sexual abuse prevention for sexual health promotion among East Asian students. The prevalence rates of sexual abuse in this study (4.5% of boys and 11.6% of girls) were comparable to those in Asian countries, reported in recent meta-analyses. Mean prevalence rates were 4 - 5% for males and 11% for females, estimated from studies in Asian countries (Pereda, Guilera, Forns, & Gomez-Benito, 2009; Stoltenborgh, van IJzendoorn, Euser, & Bakermans-Kranenburg, 2011). The rate for females in Asia was significantly lower than that for females in North America, whereas the rate for males in Asia was not significantly different from that for their North American counterpart (Stoltenborgh et al., 2011). But the lower rates of sexual abuse in Asian countries may be related to their collectivist cultures that discourage disclosure of abuse experiences in order to protect the family from the shame and due to cultural taboos of discussing sexuality (Stoltenborgh et al., 2011). Disclosure issues may be an important component of sexual abuse prevention programs targeted at East Asian children and adolescents.

The findings about sexual abuse as a risk factor need to be interpreted with caution. The BC AHS did not ask types of sexual abuse (e.g., non-contact, contact/non-penetrative, penetrative), and sexual abuse in this study included forced intercourse. It is thus possible that first sex was coerced, or forced sex may have occurred after initiating consensual sexual intercourse (e.g., forced to have sex by one's steady sexual partner). These may have contributed to overestimating the effect of sexual abuse. Nevertheless, I used the sexual abuse variable for two reasons. First, as mentioned in the introduction section, past research has demonstrated that those with a history of forced sex were more likely than those with no such history to start voluntary intercourse at a younger age (Fergusson et al., 1997; Noll et al., 2003). The second reason is greater vulnerability of sexual abuse survivors to revictimization, as reported by

numerous studies (see a review by Classen, Paresh, & Aggarwal, 2005). In a study in New Zealand, young women who experienced contact but non-penetrative abuse in childhood were nearly five times more likely than their non-abused peers to be a victim of attempted or completed rape during adolescence (Fergusson et al., 1997). Therefore, not including any type of sexual abuse in the analyses or excluding students who reported forced intercourse from the analyses would have lost a significant predictor for sexual initiation or a significant target group for sexual health promotion.

Emotional distress in the past 30 days was associated with being sexually active for boys. This association among girls was no longer statistically significant when other risk factors were taken into account. These results were not consistent with past research showing a stronger association for girls than for boys. In their analyses of a nationally representative sample of adolescents in the US from the National Longitudinal Study of Adolescent Health (Add Health), Longmore and colleagues (Longmore et al., 2004) reported that girls with greater frequency of depressive symptoms at Wave 1 were more likely to start sexual intercourse between waves (one year apart). Longmore and colleagues further reported that among girls, sexual onset between waves was associated with a higher level of depression symptoms at Wave 2. Using the same dataset, Spriggs and Halpern (2008) found that high depressive symptomatology at Wave 1 was more prevalent among female early initiators (those aged 15 or younger at first intercourse) and typical initiators (sexual debut between 16 and 18) than later initiators (those aged older than 18 at first intercourse). However, the association between depressive symptoms and sexual initiation was not found for boys in either of the two studies. Experiencing depressive symptoms may affect teens' decision making on sexual initiation; then, distressed adolescents may just let situations happen without careful consideration (Longmore et al., 2004). Girls may be more susceptible to the effect of emotional distress on sexual activity than boys due to cultural beliefs



of women as passive in sexual interactions. In addition, the reciprocal relation between depressive symptoms and sexual onset was found only among younger adolescents (Spriggs & Halpern, 2008). Younger teens' decision-making capacity, which is less matured, may be diminished more notably by distress than that of older teens. Sexual initiation during early adolescence is not normative; participation in non-normative behavior may lead to emotional distress. In the current study, the non-significant result among girls at a multivariate level may be due in part to a lack of statistical power, given very few East Asian girls aged 15 or younger who had ever had sexual intercourse (see Chapter 3). Research cited here (Longmore et al., 2004; Spriggs & Halpern, 2008) was conducted in the US and did not exclusively focus on East Asian or any Asian adolescents. These cultural differences may also be related to contradictory findings between this and past studies.

Again, inconsistent with past results, sexual initiation was significantly associated with emotional distress among East Asian boys. Another secondary analysis of Add Health data showed that depression at Wave 2 was predicted by high-risk behaviors such as engaging in both sexual intercourse and higher levels of substance use, but not by "experimental behaviors" such as having a single sexual partner or lower levels of substance use at Wave 1 among boys (Hallfors, Waller, Bauer, Ford, & Halpern, 2005). For East Asian boys in this study, the majority of whom had never had sexual intercourse or used substances, even modest involvement in these activities may differentiate distressed and non-distressed boys. No other research, however, has investigated this association among separate samples of Asian boys and girls. More studies are needed to see whether or not similar results are observed in different samples of East Asian teens in Canada and to understand the underlying mechanism.

Girls who reported that they look older than their peers were more likely to have ever had sexual intercourse. Similar results have been found in other studies which measured

adolescents' physical maturation with levels of pubertal development (Browning et al., 2004; Dittus & Jaccard, 2000; Marin et al., 2006; Roche et al., 2005) or coders' ratings of adolescents' appearance (Siebenbruner et al., 2007), none of which focused on Asian teens. East Asian girls who appear to be physically matured, like their peers from other ethnic groups, may be more likely to have an older partner, putting them at greater risk of earlier sexual onset, and to be a target of sexual abuse. Those girls need timely information about pubertal development, sexual decision making, and how to deal with pressure to have sex and to avoid being abused.

For East Asian boys in particular, school connectedness is a significant factor associated with lower odds of having ever had intercourse. Researchers in BC (Saewyc et al., 2008) and the US (Resnick et al., 1997) have found that school connectedness is a protective factor among general adolescent populations. School is a key social environment to learn about healthy relationships and behavior. Students who feel connected to school may adhere to school messages (Hahm et al., 2006). But this may not be the case for some ethnic groups. In research with Aboriginal adolescents in BC (Devries, Free, Morison, & Saewyc, 2009) and American Indian adolescents (Hellerstedt et al., 2006), a significant relationship between higher school connectedness and sexual abstinence was found only for girls. Devries and colleagues stated that given the lower connectedness to school and school completion rates among Aboriginal students than among their non-Aboriginal peers, school environment may not be relevant for Aboriginal youth. In contrast, school may mean more to Asian students given that academic achievement has been valued in their cultures. However, the significant association only among girls, not boys, was also reported in Hahm and colleagues' Add Health study. The difference in findings between this and Hahm et al.'s research might be attributed to the difference in school ethnic composition. In Add Health, it appears that most schools had a low proportion of Asian students (Ueno, 2009). In the 2008 BC AHS, although information on ethnic composition at a school

level was not available, East Asians made up about half of the participants in two regions (Vancouver and Richmond) and 30% in one region (Fraser North) (Peled, et al., 2009; Poon, et al., 2009; Stewart, et al., 2009). East Asian students in BC may have more resources from their same-ethnic peers in school, culturally competent teachers, and culturally supportive environments.

Family connectedness served as a strong protective factor especially for girls. The link between family relationships and teen sexual activity, however, is not always consistent across gender. Gender-stratified analyses have revealed that sexual initiation was influenced by parental factors such as relationship quality and parents' sexual attitudes only for girls, but not for boys (Hahm et al., 2006; McNeely et al., 2002; Mueller et al., 2010; Pearson et al., 2006; Regnerus & Luchies, 2006). Drawing on Carol Gilligan's theory, Mueller et al. (2010) and Pearson et al. (2006) speculated that women's sensitivity to and dependence on interpersonal relationships and caring may relate to the stronger effect of family on girls' sexuality. Other explanations are that other social factors such as peers may be more influential for boys; and in general, boys' premarital sexual activity is more permissive than that of girls (McNeely et al., 2002). Gender role expectations for women as a cultural bearer may also explain the findings. Women are expected to transmit cultural values and practices to the next generation (Phinney, 1990; Suarez-Orozco & Qin, 2006). Therefore, East Asian girls may receive more cultural messages about adolescent sexual behavior from their families, which traditionally discourage teens from initiating sexual intercourse. Although ethnic identity was not significantly associated with sexual initiation among girls when controlling for risk factors, cultural influences may remain through family ethnic socialization.

### **Probability Profiles**

As shown in Figure 6.3 and Figure 6.4, the presence of risk and protective factors

substantially influenced the probability of being sexually active. In the worst case scenario with all risk factors present and no protective factors, the probability was 50-60%. Given the high probabilities (almost 100%) of being sexually active among African American, Latino, and European American adolescents in the high-risk category in Perkins and colleagues' study (Perkins et al., 1998), the probability among East Asian adolescents in the present study was low. But the samples in the two studies differed on the prevalence of sexual experience; 37-79% of boys and 33-57% of girls had ever had sexual intercourse in Perkins and colleagues' study, compared with less than 10% in this study. The presence of the three risk factors each for boys and girls dramatically increased the chance of being sexually active. The probabilities with three risk factors and no protection were 25-30 times greater than those with no risk or protection.

It appears that emotional distress alone had a small influence on the estimated likelihood of sexual initiation among boys. Nevertheless, this factor should not be underestimated, given that emotional distress is a well-established factor associated with alcohol use (e.g., Tschann, Flores, Pasch, & VanOss, 2005). Adolescents may use alcohol as an escape-avoidance form of coping to ease their distress (Tschann et al., 2005). The probability for distressed boys who reported lifetime alcohol use was eight times higher than that for their non-alcohol using peers. The results may suggest the need for boys experiencing emotional distress to learn effective coping skills.

Protective factors played a significant role in reducing the likelihood of ever having sexual intercourse. Even among boys who had ever been sexually abused, ever used alcohol, and were emotionally distressed, their probability of being sexually active was decreased by half when they felt strongly connected to school. Likewise, among girls who had ever been sexually abused, ever used alcohol, and looked older than their same-age peers, their probability was decreased by 16% with the addition of a stronger sense of ethnic identity and by 35% with the

addition of higher levels of family connectedness and school connectedness. With all three protective factors present, their probability was reduced by half. Estimating the likelihood of being sexually active given various combinations of risk and protection, not only calculating the likelihood in the best and worst case scenarios, offers important practical implications. As shown above, higher levels of protective factors can buffer against the effects of risk exposure on sexual initiation. This means that by fostering adolescents' social connectedness, healthcare professionals can help to promote sexual health for those exposed to irreversible risks (e.g., sexual abuse histories) or unpreventable risks (e.g., looking older). In particular, higher school connectedness for boys and higher family connectedness for girls appear to be key protective factors.

### **Strengths and Limitations of the Study**

Using a probability sampling survey, the current study analyzed responses from a large number of East Asian adolescents with various backgrounds, including foreign-born and Canadian-born, single-ethnic and multi-ethnic, and using English or other languages at home. This increases generalizability of the findings. Another strength of using the BC AHS is that this study was able to examine a wide variety of factors that may be associated with sexual activity. Those factors were located in multi-level systems hypothesized in ecological models. With multiple personal and ecological risk and protective factors, this study estimated the likelihood of being sexually active. Rather than examining the independent effect of each predictor in a multivariate model, developing probability profiles has some advantages, such as assessing cumulative effects of risk and protection and visually presenting the results, which make it easier to interpret the findings.

An important limitation is that due to the cross-sectional design of the survey, we cannot determine causal or temporal relationships between factors and the outcome. In the

present study, the outcome was a past event, whether a student had ever had sexual intercourse. Some factors, on the other hand, were recent or current experiences such as family connectedness, ethnic identity, and emotional distress in the past 30 days. A lower level of family connectedness or greater emotional distress among sexually active adolescents may have resulted from or occurred after first intercourse. It is also possible that sexually active youth had lower connectedness or greater distress when they had first intercourse, as longitudinal studies have reported that prior higher connectedness and lower distress linked to delayed sexual onset (e.g., Hahm et al., 2006; L'Engle & Jackson, 2008; Pearson et al., 2006; Spriggs & Halpern, 2008).

Heterogeneity within the East Asian group should not be ignored. The magnitude of association between risk and protective factors and sexual initiation may not be the same within the group. The BC AHS was developed for the general population of students in BC, not for East Asian or any other specific ethnic groups. The survey thus did not have detailed information on ethno-cultures such as country of origin and generational status.

While the present study investigated various potential risk and protective factors, some factors may be missing. Exploring factors in more remote levels of adolescent ecology (e.g., school policies, sexuality education curriculums, the availability of sexual health services at school and neighborhood contexts) would provide richer information. As well, given the importance of peer relationships during adolescence, more peer factors should be examined. Perceived peer attitudes about teen pregnancy, the only peer factor examined in this study, were not a significant factor. But this variable was measured by a single item. There would be more appropriate measures to assess peer influences on sexual initiation.

### **Implications for Future Research**

This study investigated what were risk and protective factors associated with initiating

sexual intercourse among East Asian youth in BC. As repeatedly emphasized, there is no similar research on East Asian youth in Canada. Future research may replicate this study in other provinces so that we would see similarities and differences among East Asian adolescents living in different parts of Canada. Specifically it would be interesting to compare the effects of cultural factors on sexual activity in other multi-ethnic regions, such as Ontario, where East Asians account for 6% of the population (Statistics Canada, 2008e) or less ethnically diverse regions, such as the Atlantic region, where 0.4% of residents are East Asians (Statistics Canada, 2008e) with the current findings in BC, where East Asians comprise 12% of the population (Statistics Canada, 2008e).

Longitudinal studies are more powerful than cross-sectional studies in determining temporal relationships and causal inferences between predictors and sexual health outcomes. In addition, more thorough investigations of predictors and their associations with sexual initiation would further clarify the mechanisms by which risk and protective factors identified in this study increase or decrease odds of sexual debut during adolescence. For example, in a longitudinal study in West Virginia's counties, lifetime alcohol use offered high sensitivity (82%) to identify adolescents who would initiate sexual intercourse during the next 9 months, but a lower specificity (58%) to identify those who would not (Guo et al., 2005). Such information would be useful in developing a screening tool used in clinical settings. Lifetime alcohol use ranges from experimental use to regular or heavy use. There may be a threshold level on the range of alcohol experience above which alcohol use influences adolescents' sexual behavior, rather than just the presence or absence of alcohol experience. Longitudinal studies also would help to determine the directionality of the association between emotional distress and sexual initiation. This association in this study was not consistent with past research on non-Asian youth. Replication of this study is also suggested with different cohorts of East Asian

adolescents in BC and with East Asian adolescents in other regions to examine the robustness of the findings.

The social development model (Catalano & Hawkins, 1996; Catalano et al., 2004) was used to explain a possible mechanism underlying the link between social connectedness and sexual initiation. This model posits that strong bonds to prosocial or antisocial agents affect adolescents' health and risk behaviors. We, however, do not know about perceived or actual values and expectations about teen sexual activity in family, school, or ethnic cultural contexts. Future work would extend the sample to parents, school personnel, peers, and ethnic community members as well as adolescents in order to examine whether this assumption is valid.

### **Recommendations for Practice**

The findings of this study support the significance of both risk reduction and enhancement of assets and resources in promoting sexual health among East Asian youth. Interventions to prevent substance use and sexual abuse and to foster social connectedness would be helpful in postponing sexual initiation for both genders. To my knowledge, no intervention programs for these purposes targeted at East Asian youth have been reported. Instead, there are a number of educational programs which may be applicable to this group.

Among programs for delaying initiation of substance use, the *Strengthening Families Program* (SFP) (Spoth, Redmond, & Shin, 2001) and a combined program of the *Life Skills Training* and the *Strengthening Families Program: For Parents and Children 10–14* (the LST + the SFP 10-14; Spoth, Redmond, Trudeau, & Shin, 2002) have shown their effectiveness. The SFP was designed to reduce youth substance use by strengthening parenting skills and children's prosocial and peer resistance skills. The LST (Botvin, Baker, Dusenbury, Botvin, & Diaz, 1995) is a school-based substance use prevention program that helps students to develop their social skills, and knowledge and skills specifically related to resisting social pressure to use



substances. The SFP (Spoth et al., 2001) and the LST + the SFP 10–14 (Spoth et al., 2002) demonstrated lower alcohol initiation than the control condition.

The SFP has been implemented for predominantly White youth in the US (Spoth et al., 2001; Spoth et al., 2002). For East Asian youth in Canada or any other ethnic minority youth, a replication of the program would require some modifications. In fact, modeled after the SFP 10–14, the *Strong African American Families* (SAAF) program was designed as a family-centered, alcohol use prevention intervention for African American preteens (Brody et al., 2004; Brody et al., 2006). The SAAF consists of sessions to enhance positive parenting skills (e.g., racial socialization) and foster youth protective factors (e.g., goal-directed future orientation). As expected, a lower proportion of alcohol initiators was found in the SAAF group than in the control group (Brody et al., 2006). Furthermore, the intervention-induced increases in levels of positive parenting and youth protective factors contributed to the deterrence of youth alcohol use (Brody et al., 2004; Brody et al., 2006). The SAAF may serve as a good example of culturally sensitive intervention designs.

Various sexual abuse prevention programs have been developed. Most of them were child-focused and school-based, and aimed at increasing three “R”s – *recognizing, resisting, and reporting* abuse through improvements in knowledge and self-protection skills (Wurtele, 2009). Characteristics of effective programs include repeated practice and exposure to sessions; modeling, discussions, role-play, and skill rehearsal; and parental involvement (Kenny, Capri, Thakkar-Kolar, Ryan, & Runyon, 2008; Topping & Barron, 2009; Wurtele, 2002). Parents (or caregivers) need to be educated about the topic, and prepared to talk with their children about abuse and to help them with practicing self-protection at home (Wurtele, 2009).

No published data were available on sexual abuse prevention programs for East Asian youth in Canada or the US. A key to success of the programs for this group may be to develop

interventions that reflect their ethnocultural norms, beliefs and values. Definitions of sexual abuse vary from country to country. Additionally, there are cultural differences in acceptance of touching. For instance, East Asian countries are considered *non-contact culture* where people avoid physical contact (McDaniel & Andersen, 1998). Less acculturated East Asian children may find it difficult to distinguish a cheek kiss and a hug as friendly greetings and inappropriate contact. Children and parents from recent immigrant families need to understand what constitutes sexual abuse and what generally counts as inappropriate touching in the new country. Given cultural values on self-reliance, abuse victims' feelings of personal and family shame, and cultural taboos of discussions about sexuality (Shen, 2011; Stoltenborgh et al., 2011), other key components may be active parental involvement and community-wide efforts to increase their knowledge and levels of comfort in talking about sexual abuse and to develop a supportive climate for abuse victims to promote disclosure. To protect early maturing girls from sexual abuse and early onset of sexual activity, anticipatory guidance for parents may be helpful.

The findings of this study underscored the importance of the roles of protective factors in sexual health promotion. Some risk factors (e.g., perceived physical maturation) are not amenable to change. Others (e.g., sexual abuse) may be preventable; but negative experiences are not reversible once they occurred. Reducing exposure to risk factors is necessary but not sufficient to improve sexual health. The study results indicate that a strong sense of connection to family, school, and culture can buffer negative effects of risk factors on sexual activity among East Asian adolescents. *Connectedness* is a central element of a positive youth development approach that has been efficacious in preventing risky sexual behavior (Markham et al., 2010). An example of this approach is a 6-year intervention with children during grades 1 through 6 in Seattle (Lonczak, Abbott, Hawkins, Kosterman, & Catalano, 2002). The intervention was developed to promote school and family connectedness by encouraging children's active

involvement in school and family, and enhancing children's social competencies. The intervention program consisted of three components: teacher training (e.g., interactive teaching skills), child social and emotional skill development (e.g., interpersonal problem-solving skills), and parent training (e.g., child behavior management skills). Despite the absence of a sexual education component, youth in the intervention group had first intercourse at an older age and fewer sexual partners by age 21 than did those in the control group. The long-term effects of the intervention on a history of pregnancy and childbirth were also observed for young women.

The sample of the positive youth development program in Seattle included an ethnically diverse group of youth, 21 percent of whom were Asian Americans (Lonczak et al., 2002). Although this program might be applied to East Asian adolescents in Canada, integrating cultural specific components into a program would strengthen its effectiveness. For instance, *Familias Unidas*, a parent-focused intervention program was developed to protect Hispanic youth from substance use and risky sexual behaviors by incorporating Hispanic-specific cultural issues into all aspects of the intervention and enhancing family functioning (Pantin et al., 2003; Prado et al., 2007). The parent-focused approach was chosen based on family-centered cultural values in Hispanic immigrant families. Hispanic youth in the intervention group were less likely than their peers in the comparison group to report unprotected sex at last intercourse (Prado et al., 2007).

Individual assessment for alcohol use in clinical settings may help to identify East Asian students who may initiate sexual intercourse during adolescence and to provide youth and their families with anticipatory guidance, in order to prevent earlier sexual initiation and subsequent risky sexual behaviors. In fact, routine alcohol screening for youth is recommended (Committee on Substance & Kokotailo, 2010; Greig, Constantin, Carsley, Cummings, & Canadian Paediatric Society Community Paediatrics Committee, 2010). The 6-item CRAFFT

questionnaire may be one of good screening tools, with a score of 2 or above yielding acceptable sensitivity and specificity for problem substance use (Dhalla, Zumbo, & Poole, 2011; Knight, Sherritt, Shrier, Harris, & Chang, 2002; Knight, Sherritt, Harris, Gates, & Chang, 2003). A lower cutoff criterion may be appropriate for East Asian youth, as a large-scale study of young males in Singapore (65% Chinese ethnicity) showed an optimal cutoff point of 1 for both adolescent boys and young adult men (Subramaniam, Cheok, Verma, Wong, & Chong, 2010). Studies are needed on screening instruments for alcohol use among East Asian adolescents in Canada.

Clinicians should be alert for the behavioral or physical signs and symptoms of sexual abuse (Kellogg, 2005). A history of sexual assault should be routinely screened for adolescents (Kaplan et al., 2001). Earlier identification of abuse victims is critical to protecting them from additional harm and involvement in risky behavior. Healthcare professionals may provide or refer abused youth to appropriate resources or intervention programs. An example of interventions is a nurse-led, strength-focused program for sexually exploited young runaway girls, the Minnesota Runway Intervention Program (RIP; Saewyc & Edinburgh, 2010). The RIP includes home visitation, health care, health education, support group, and case management. As planned, girls exposed to the RIP demonstrated improvements in social connectedness and psychological well-being, and reduction in substance use and risky sexual behaviors. Their levels of protective assets and resources as well as risky behaviors became similar to those of nonabused girls in school.

In summary, the current study highlights the importance of an ecological, risk and protection approach to sexual health promotion for East Asian adolescents in school. This approach has been used in research and practice, but not specifically for East Asians. The findings of the current study suggest that it is worthwhile to develop new or modify existing

group-based and clinical strategies with risk-and-protection approaches to promote sexual health among East Asian adolescents in Canada.

## **Chapter 7. Conclusion**

The overall aim of the dissertation study was to investigate factors associated with increased or decreased likelihood of sexual initiation, with a focus on ethno-cultural factors, among East Asian adolescents living in British Columbia (BC). This dissertation consists of four studies. The sample consisted of 4,311 East Asian students who participated in the 2008 British Columbia Adolescent Health Survey (BC AHS), a cross-sectional, school-based survey of students in grades 7 through 12. This final chapter summarizes the results from the four studies and then discusses limitations and contributions of the study. Implications for future research and practice are also provided.

### **Summary of Findings**

Project One (Chapter 3) documented prevalence estimates of sexual health and risk behaviors. Sexually active boys and girls (i.e., those who had ever had sexual intercourse) accounted for 9% and 10%, respectively. Of those sexually active students, about 70% had engaged in sexual behaviors that can increase the risk of sexually transmitted infections (STIs) and unintended pregnancy. Cultural exposure, measured by length of stay in Canada and primary home language, was associated with sexual behavior. Compared with immigrants who spoke a language other than English at home, both immigrants and Canadian-born students whose primary home language was English were more likely to have experienced oral sex and sexual intercourse. Among sexually active girls, spending all their lives in Canada was associated with greater odds of using birth control pills at last intercourse; speaking a language other than English at home was associated with lower odds of birth control pill use at last intercourse. Additionally, among non-sexually active adolescents, reasons for sexual abstinence appeared to differ by levels of cultural exposure.

Project Two (Chapter 4) and Project Three (Chapter 5) focused another cultural factor,

ethnic identity. Confirmatory factor analyses indicated that the 6-item Multigroup Ethnic Identity Measure-Revised (MEIM-R) measured two highly correlated dimensions of ethnic identity (ethnic identity exploration and commitment). Further, the MEIM-R was invariant across three age groups of East Asian teens (early, middle, and late adolescence) and four groups categorized based on primary home language and years in Canada. Regardless of their developmental levels, or potential linguistic barriers or cultural differences, adolescents in this study had similar conceptual frames and responded to the items on the MEIM-R in a similar way. Using the MEIM-R, Project Three examined the association between ethnic identity and sexual initiation. Overall, stronger ethnic identity was associated with being non-sexually active.

Ethno-cultural factors appeared to play a role in whether or not East Asian adolescents were sexually active. From an ecological perspective, however, other significant factors in adolescents' lives may also influence being sexually active. Project Four (Chapter 6) was conducted to identify risk and protective factors associated with sexual initiation, and examine the likelihood of sexual initiation, given a specific set of risk and protective factors. As presented in Figure 6.1 and Figure 6.2 (Chapter 6), the top three risk factors for boys included lifetime alcohol use, a history of sexual abuse, and emotional distress in the past 30 days. For girls, the top three risk factors were lifetime alcohol use, sexual abuse histories, and looking older compared to peers about the same age. School connectedness was a strong protective factor for boys; family connectedness, ethnic identity, and school connectedness were the top three strong protective factors for girls. The presence of protective factors substantially decreased the likelihood of sexual initiation for adolescents exposed to risk. For example, among boys with the top three risk factors, the probability of being sexually active was reduced by half if those boys felt strongly connected to school. Likewise, among girls characterized by the top three risk factors, the probability decreased by half if those girls felt strongly connected

to family, school, and their ethnic groups.

### **Limitations of the Study**

#### **Secondary Data Analysis**

A first limitation concerns use of an existing dataset. Variables examined in the current study were limited to those in the original dataset (the 2008 BC AHS). There would be other factors associated with sexual activity such as more proximal (e.g., adolescents' attitudes toward teen sexual behavior) and structural ones (e.g., the availability of sexual health information and services in school and community).

The original survey was not designed for research on any specific ethnic/cultural group; thus, measures related to culture were limited. For example, years in Canada and primary home language were used to measure one's extent of contact with Canadian and East Asian cultures, because it is assumed that a greater degree of contact with Canadian or East Asian cultures can lead to increased opportunities to learn and adopt its cultural patterns (Chia & Costigan, 2006a, 2006b ; Greenman & Xie, 2008; Thomson & Hoffman-Goetz, 2009). But it is unclear the extent to which such indicators measure actual levels of cultural influences, especially in this study where the measure of cultural exposure was a categorical variable created with two dichotomous indicators. Similarly, length of residence in Canada and language use at home do not provide information as to what aspects of cultural patterns (e.g., norms, values, practices) are adopted or maintained (Alegria, 2009). Additionally, the questionnaire was written in English. Only students who can speak English completed the survey. Some very recent immigrants may not have participated.

#### **Study Design**

Several limitations relate to the study design. First, the BC AHS was a cross-sectional survey. The present study investigated correlational relationships between potential risk and



protective factors and sexual initiation. Although *predictors* were selected in accordance with theories and results of past studies including longitudinal research, the direction of the relationships cannot be determined from the cross-sectional data.

Second, the sample of the BC AHS, a school-based survey, did not include adolescents who dropped out of school or were absent from school on the day of the survey. Those who are out of school or frequently skip school may be more likely to initiate sexual activity. The study findings may not be generalizable to those youth.

Third, the BC AHS relied on students' self-reports. As with any retrospective survey on health and risk behaviors, there is a possibility for response biases or errors caused by longer recall periods, social desirability, concerns about confidentiality and anonymity, a feeling of embarrassment, and inaccurate interpretations. Some responses may have been affected by East Asian cultural norms that discourage adolescent sexual activity and open communication about sexuality, potentially resulting in missing or inaccurate responses. The higher rates of missing responses to sex-related questions among boys than among girls (Table 2.1) might be related to gendered beliefs about sexuality. For example, some sexually non-active boys might have been reluctant to answer sex-related questions due in part to stereotypical masculinity beliefs that permit or even encourage male heterosexual activity. This stereotype may have also resulted in overreporting for some boys. Response biases or errors are inevitable in self-administered surveys, and there is no way to verify the correctness of responses to sex-related questions. Self-report, however, is the only way to assess sexual behaviors. Additionally, some research has shown that the majority of adolescents consistently or honestly answer questions regarding sexual behavior (Rosenbaum, 2009; Siegel, Aten, & Roghmann, 1998).

### **Heterogeneity of the Sample**

The current study treated East Asians as one ethnic group while recognizing the

heterogeneity within the group. The sample consisted of adolescents with different ethno-cultural backgrounds, such as various countries of origin of the students or their ancestors; generations, ranging from new immigrants to multi-generation Canadians; and native languages. Multi-ethnic East Asians as well as single-ethnic East Asians (those who marked the “East Asian” option only as their ethnic/cultural background) were also included in this study. The sample selection was made based on the assumption that those self-reported East Asian students have been exposed to East Asian cultures in the family context while the degree of exposure and cultural influences varies by individual characteristics and contexts. The inclusion of East Asian youth from diverse ethno-cultural backgrounds increases generalizability of the findings; at the same time, it limits understanding of differences among subgroups or individuals. It may also lead to essentialization or perpetuated stereotypes of East Asian cultures and groups, which is not an intention of this study. With increasing numbers and diversity of East Asians living in BC, it will become more important to look into the heterogeneity of this group.

### **Sexual Initiation as a Focus of the Study**

A primary outcome of the analysis was whether or not adolescents had ever had sexual intercourse. Behaviors and experiences among sexually active youth may have been heterogeneous, varying in frequency of sexual intercourse, number of lifetime sexual partners, relationship characteristics (e.g., committed versus casual), frequency and methods of contraceptives, meanings attached by adolescents to their experience, and so on. Consequently, sexually active students in this study may have differed in levels of risk for STIs, unintended pregnancy, and social and emotional consequences. Adolescent sexual activity is not universally considered risky, normative, or acceptable. However, the findings from this and past studies (e.g., Lowry, Eaton, Brener, & Kann, 2011) suggest that it is not normative for East Asians to engage in sexual intercourse by the time they finish high school. In this study many sexually

active East Asian adolescents reported engaging in some type of risky sexual practices. Sexual initiation during adolescence still appears to be considered unacceptable among Asians living in Western countries, in part because it can be a risk for not only unwanted pregnancy and STIs but also adolescents' educational failure (Kao, Guthrie, & Loveland-Cherry, 2007; Kim, 2009; Yu, 2007, 2010).

### **Contributions of the Study**

#### **Study Population and Data Quality**

This study makes several contributions to the current knowledge base. First, the current study provided reliable data collected from an understudied population in Canada. This study targeted East Asian youth, the largest visible minority groups in BC. Although studies in the United States (US) have shown that East Asian or other Asian youth have different profiles of sexual behaviors from other ethnic groups, limited Canadian information has been published. The present study analyzed recent data from a large number of East Asian adolescents, which was enabled by the use of the 2008 BC AHS.

The use of the existing large, population-based dataset generated high-quality information about a population that is understudied. First, because the BC AHS used a cluster-stratified sampling of adolescents in schools throughout the province, the East Asian subsample was less biased than convenience samples. For example, the sample was not limited to those involved in ethnic group activities or living in urban areas or ethnic enclaves, thus including those with differing levels of acculturation from various geographical locations within BC. Second, the quality level of the weighted estimate was assessed by checking the coefficient of variation, as has been done by Statistic Canada (e.g., Statistics Canada, 2007). Only reliable data were reported, and notes were made of potential high-level sampling error.

## **Rethinking the Role of Culture**

### **Cultural exposure and acculturation**

This study used a combined measure of temporal exposure to Canadian culture and linguistic exposure to heritage cultures, rather than using each as a separate indicator. By doing so, differences and similarities were found within the immigrant group (those who used a language other than English at home versus those who did not) and within the group whose primary home language was not English (those spending all their lives in Canada versus those who did not). Compared with immigrant adolescents who spoke a heritage language at home, immigrants and Canadian-born teens with less exposure to heritage cultures were more likely to report having had sexual intercourse; heritage language users with greater exposure to Canadian culture were as likely to do so (Table 3.4). A longer stay in Canada alone was not necessarily associated with a greater likelihood of sexual initiation. These results imply the utility of bidimensional models of acculturation. Maintenance of some elements of heritage cultures, rather than assimilation to mainstream culture, may be an important factor that can affect East Asian teens' sexual activity. This may be also suggested by the lower prevalence of sexual initiation (10 – 13%) among Canadian-born East Asian students who used English at home, compared with the provincial average of 22% (Smith et al., 2009). While assumed to be the most assimilated, those students may be different from their ethnic majority peers with regard to sexual activity. Cultural influences on sexual behavior may still remain among East Asian students with less exposure to their heritage cultures.

In contrast, some reasons for sexual abstinence, especially among girls, appeared to differ by temporal exposure to Canadian culture (Table 3.6). Compared with immigrant teens whose primary home language was not English, Canadian-born teens, regardless of the language spoken at home, were more likely to endorse external influences (e.g., “friends would

disapprove”) and avoidance of sexual risk. Thus, temporal exposure to Canadian culture may also reflect adolescents’ peer networks and knowledge about sexual health. Future research should explore what is tapped by proxy measures of cultural exposure (or acculturation) so that we can better understand what differentiates adolescents who start engaging in sexual intercourse from those who delay.

### **Ethnic identity**

The construct of ethnic identity and the Multigroup Ethnic Identity Measure (MEIM; e.g., Phinney & Ong, 2007) have been used in a number of studies. Nevertheless, none has been used in a population-based study. Drawing on data from a province-wide, probability sample, psychometric analysis offered strong evidence of reliability and validity of scores on the 6-item MEIM (MEIM-R). Testing measurement invariance added another evidence of utility of the instrument. Moreover, an examination of measurement invariance across subgroups has not been common in nursing research. The present study makes a methodological contribution to psychometric studies in nursing.

Another methodological contribution relates to the practical use of the MEIM-R. In this sample, the two-factor model consisting of *Ethnic identity exploration* and *Commitment* was psychometrically sounder than the one-factor model of *Total ethnic identity* (Chapter 4). However, because of the high interfactor correlation, the strength and direction of the association with sexual initiation did not differ much regardless of which variable (*Exploration*, *Commitment*, or *Total ethnic identity*) was entered in a logistic regression model (Chapter 5). These results suggest that the separate use of the two MEIM-R subscores may not be meaningful. A combined measure of *Total ethnic identity* would be recommended when the MEIM-R is used to investigate the association with risk behaviors and when the correlation between two subcomponents is high. This may not be the case when the longer version of the

MEIM is used and/or the interfactor correlation is not high. In a study using the 12-item MEIM (Yasui et al., 2004), *Commitment* was associated with externalizing behaviors whereas *Exploration* was not. If researchers are interested in the relationship between each component of ethnic identity and teen risk behaviors, the longer version of the MEIM may be preferred. But for large-scale, comprehensive school-based surveys such as the BC AHS, longer scales are not always feasible or preferable because of time constraints and respondent burden. In such a case, the brief measure (MEIM-R) is more suitable, particularly when the overall strength of ethnic identity is a research interest.

This study also implies the need to rethink about mechanisms underlying the relationship between ethnic identity and sexual activity among East Asian youth. Previous scholars have hypothesized that strong ethnic identity could be a source of self-esteem (Roberts et al., 1999) and self-esteem would mediate the link between ethnic identity and psychological adjustment and risky behaviors (Schwartz, Zamboanga, & Jarvis, 2007). In the present study, however, self-esteem had a statistically significant but weak correlation with ethnic identity and a non-significant association with ever having sexual intercourse. Self-esteem appears not to be a relevant construct to explain the association between ethnic identity and sexual activity for East Asian students in BC. Higher levels of exploration of and commitment to one's ethnic group may be an essential source of social support, rather than personal self-esteem. In addition, as with family connectedness and school connectedness, adolescents who feel strongly connected to their ethnic groups may wish to conform to norms and expectations held by their significant others or institutions (Catalano, Haggerty, Oesterle, Fleming, & Hawkins, 2004; Pearson, Muller, & Frisco, 2006). If their ethnocultural norms inhibit adolescents from sexual activity, they are likely to postpone sexual initiation. This is plausible because ethnic identity measured by the MEIM (Phinney, 1992; Phinney & Ong, 2007; Roberts et al., 1999) reflects

one's participation in activities to learn about his or her ethnic group, and one's sense of belonging and commitment, rather than ethnic labeling or ethnic pride. Other components of ethnic identity (e.g., ethnic pride) may influence adolescent sexual behavior through a different mechanism.

### **Gender Matters**

Multiple studies have examined whether or not sexual experiences differ by gender. A recent meta-analysis showed that men reported more sexual experiences than women; yet, the magnitudes of differences were typically small (Petersen & Hyde, 2010, 2011). The effect sizes were smaller in large national datasets collected in the US, United Kingdom, and Australia than those in individual studies. Peterson and Hyde (2010) also analyzed the 1991 – 2005 US Youth Risk Behavior Surveillance Study (YRBS) data, and reported a decrease in gender differences across years. Boys' reports of sexual initiation decreased at a faster rate than girls. The 2009 YRBS observed no gender difference in ever having sexual intercourse (Centers for Disease Control and Prevention, 2010). The results of this Canadian-based study lend support to the notion of no or small gender differences in prevalence of sexual behaviors, challenging the stereotype that men are more sexually experienced than women. This finding may contribute to breaking the stereotype and the sexual double standard such that men are rewarded for having more sexual experiences whereas women are degraded for similar behaviors, perhaps reducing social pressures to conform to prescribed gender roles (Petersen & Hyde, 2010).

Gender still should not be negligible in sexual health research. There was a difference in the rates of condom use at last intercourse, with fewer girls having done so. In fact, condom use is a distinctly different behavior for men and women: it is wearing a condom for men and persuading a partner to use a condom for women (Amaro, 1995). Gender power imbalance is one of possible reasons for the disparity as empirically supported (Crosby et al., 2008; Manning,

Flanigan, Giordano, & Longmore, 2009; Tschann, Adler, Millstein, Gurvey, & Ellen, 2002).

Besides gender similarities and differences in prevalence of sexual behaviors, the current study showed that some strong factors associated with sexual initiation were different between boys and girls. Gender-stratified analyses provided insights into the correlates of sexual activity to consider sexual health interventions. Gender still plays a role in adolescent sexual activity.

### **Implications from the Findings**

#### **Implications for Future Research**

Several implications for future research and practice emerged from the findings of this study. The present study showed the heterogeneity of East Asian students with regard to prevalence of sexual activity, underscoring the need to include variables related to ethnic culture in research on this population. But this study alone is not sufficient enough to reveal the complexity of the population. Variations may be found, for example, within immigrant youth (e.g., recent immigrants versus long-term immigrants) and within Canadian-born youth (e.g., second generation versus third or later generation). More sophisticated measures of acculturation or cultural influences could more precisely capture similarities and differences within East Asian youth. Factors associated with sexual health and risk practices may also differ by subgroup of this population and thus are another area of future investigations.

Ecological frameworks, along with risk and protection models, are useful to provide a broader picture of characteristics of sexually active and non-active adolescents. This study investigated a wide variety of factors surrounding adolescents, from individual to extra-familial levels, proposed based on an ecological perspective; and added scientific evidence that supports the significance of environmental factors such as a sense of connection to family and school in adolescents' health. As discussed above, many other variables still need to be explored. Among those in the exosystem or the macrosystem, geographical contexts may be an interesting factor



to consider. Youth living in rural communities and those living in urban cities are exposed to different social norms regarding sexuality and experience different barriers to access sexual health care (Shoveller, Johnson, Prkachin, & Patrick, 2007). The same may be said of East Asian adolescents living in communities with a high concentration of ethnic group members and those in low concentration areas. They may perceive different sexual norms and have different levels of accessibility to and availability of sexual health services (especially culturally sensitive care). Ethnic composition of schools and neighborhoods may affect the development and centrality of ethnic identity, which in turn may influence teen sexual activity.

The findings from this study can help to inform the basis for developing strategies to promote sexual health among East Asian adolescents. However, implications for practice are somewhat restricted because of the cross-sectional research design. Longitudinal studies are warranted to further elucidate the effects of intrapersonal, interpersonal, and environmental factors on sexual initiation during adolescence.

A number of studies have suggested that family and school are among the most critical social determinants of adolescent health. However, little is known about what fosters East Asian adolescents' sense of connection. What counted as positive family relations often varies by culture, as Chinese immigrant families and European-heritage families have different norms and expectations for parent-child relationships such as parents' expression of love and communication between parents and children (Russell, Chu, Crockett, & Doan, 2010; Wu & Chao, 2011). Parenting behaviors that develop adolescents' family connectedness are culturally specific (Chao & Kaeochinda, 2010). In East Asian culture, parental sacrifice (parents' investments in their children's welfare) is a central feature of parental support (Chao, 1994). Parental investments are manifested by providing continuous instrumental support, and parental involvement and resources for children's success, rather than verbal expressions or physical

contact (Chao & Kaeochinda, 2010). Such parenting behaviors may be considered less warmth from Western perspectives (Chao & Kaeochinda, 2010). Future research should identify what constitutes positive family relationships among East Asian youth.

The salience of factors that foster adolescents' feelings of connection to parents may differ within East Asian teens due to the heterogeneity of the population. Chao and Kanatsu (2008) found that Asian American adolescents who were fluent in their heritage languages felt higher levels of parental warmth and support. Adolescents' fluency in their heritage languages may facilitate parent-child communication and reduce acculturation gaps between generations. On the other hand, it may not be important for adolescents whose parents do not speak their heritage languages. Qualitative research methods would help illuminate the heterogeneity of the population and provide valuable insights from adolescents' perspectives.

Similarly, characteristics of schools that make students feel connected may differ between East Asians and other ethnic groups, and among East Asian recent immigrants, East Asian long-term immigrants and Canadian-born East Asian adolescents. In particular, adaptation to school is a serious challenge for immigrant students due to cultural and linguistic barriers. In a qualitative study of Chinese immigrant adolescents in Vancouver, participants reported positive and negative school experiences in the new country (Li, 2009, 2010). While appreciating Canadian liberal education, they had difficulties making new friends, perceived disregarding attitudes toward immigrants in ESL (English as a Second Language) classes, and observed lack of cross-ethnic peer interactions. A secondary analysis of the BC AHS of 2003 and 2008 showed that although East Asian newcomers felt supported by teachers more strongly than their long-term immigrant and Canadian-born peers, their sense of belonging to school was lower than or similar to those of their peers who had lived longer in Canada (Homma, Saewyc, & Zumbo, 2011). In addition to teachers' efforts, other factors such as same-ethnic and

cross-ethnic peer relationships may promote school connectedness among East Asian immigrants. Future research should explore how school environments can be improved. Qualitative research would be beneficial, especially for recent immigrant students whose voices are rarely heard (Li, 2010).

### **Implications for Practice**

The current study provides implications for nurses and other healthcare professionals who work with East Asian adolescents in school. Healthcare providers need to be aware that the majority of East Asian youth have not started oral sex or sexual intercourse; however, many sexually active East Asians were exposed to risks of unintended pregnancy and STIs. Previous studies have already shown this (Grunbaum, Lowry, Kann, & Pateman, 2000; Schuster, Bell, Nakajima, & Kanouse, 1998); similar phenomena were observed in BC. Although the proportion of at-risk East Asians among the BC adolescent population may be low, given that East Asians are one of the largest ethnic minority groups in the province, the actual number of those teens is not negligible. More attention of practitioners should be paid to this group of youth.

Healthcare professionals need to recognize potential ethnocultural influences on sexual behavior and decision-making. In the present study, differing levels of contact with Canadian and East Asian cultures and ethnic identity were associated with sexual experience, contraceptive use, and reasons for sexual abstinence. These findings indirectly point to the effects of cultural factors that may keep adolescents from initiating sexual activity and accessing sexual health information and other services. For example, sexually active girls who are less assimilated to Canada or more influenced by East Asian cultures may have misconceptions about oral contraceptives, which may hinder access to information or their actual use. It is important to understand cultural reasons underlying sexual health and risk practices. In clinical

settings, lengths of residence in Canada and primary language spoken at home are useful in briefly assessing adolescents' cultural backgrounds. At the same time, an exclusive focus on ethnic culture can lead to reinforced stereotypes and oversimplification of the group. There are many other factors associated with sexual health that were shown in this study and also those that have not yet been examined here.

As discussed in Chapter 6, sexual health promotion efforts need to focus on multiple risk exposure and protective factors in multiple layers of an ecological system. Adolescents would most benefit from interventions in collaboration with family, school, and community (general and ethnic). Interventions aimed at reducing risks and fostering social connectedness may be not only effective, as shown in past research (e.g., Lonczak, Abbott, Hawkins, Kosterman, & Catalano, 2002; Saewyc & Edinburgh, 2010), but also well suited to East Asians, given that sexuality is considered a taboo and private issue to discuss. Additionally, strengthening adolescents' connectedness to family, school, and ethnic groups may make access to sexual health information and services easier when needed.

There are few, if any, intervention programs for East Asian adolescents in Canada. Existing programs targeted at general or specific ethnic groups of youth can offer valuable insights into developing culturally appropriate programs for East Asian adolescents. Future longitudinal studies should clarify the mechanisms of the links between risk and protective factors and sexual activity among East Asian boys and girls, and evaluate the effectiveness of interventions.

In summary, to postpone sexual initiation among East Asian adolescents, it is important to develop intervention programs. Interventions should be based on an ecological risk-and-protection approach, preventing alcohol use and sexual abuse, fostering positive family relationships and a supportive school climate, and celebrating ethnocultural diversity. Working

with family, school, and community members, nurses can provide immigrant and Canadian-born East Asian adolescents with opportunities to learn about their heritage cultures as well as Canadian culture, so that adolescents can explore their cultural origins and develop a sense of belonging to the group(s) with which they identify. Likewise, in clinical encounters, nurses can screen East Asian adolescents for alcohol use, sexual abuse histories, and sociocultural isolation to identify those at sexual risk. Brief scales and proxy measures used in the BC AHS may help with screening.

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