

EXPLAINING THE ACADEMIC ACHIEVEMENT AND WELL-BEING OF ADOLESCENT  
IMMIGRANTS AND REFUGEES IN BRITISH COLUMBIA

by

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## **Abstract**

The aim of this dissertation was to gain a better understanding of the variations in academic achievement and well-being of foreign-born adolescents in British Columbia (BC) by way of two studies. Leveraging administrative data from the Ministry of Health, Ministry of Education, and Citizenship and Immigration Canada, Study 1 looked retrospectively at a population-based cohort of foreign-born adolescents in BC over the course of their high school years (Grades 10-12), in comparison to a random sample of their Canadian-born peers. The objectives of Study 1 were to (a) characterize their academic achievement and MSP-reimbursed mental health service utilization trajectories during high school, (b) identify assets and risks predicting their academic achievement and MSP-reimbursed mental health service utilization trajectories, and (c) identify the relationship between academic achievement and MSP-reimbursed mental health service utilization. Using a researcher-collected sample of foreign-born adolescents in BC, Study 2 investigated assets and risks in the academic achievement and psychological well-being of adolescents who are new to BC, with a focus on factors of adaptation associated with three overarching groups of predictors, (a) academic attitudes, (b) cultural orientation, and (c) social support.

Utilizing Group-based Trajectory Modeling, Study 1 identified that foreign-born adolescents in BC followed a range of academic and MSP-reimbursed mental health service utilization paths. By way of multinomial logistic regression, Study 1 subsequently identified a number of assets and risks that helped to explain the probability of membership in each trajectory. Study 2 utilized path analysis and found that a number of factors associated with academic attitudes, cultural orientation, and social support were predictive of psychological well-being and academic achievement for foreign-born adolescents in BC.

As expected, a number of assets and risks as well as *cumulative* assets and risks associated with migration and adaptation experiences were found to be powerful predictors of the variation in academic achievement and well-being for foreign-born adolescents in BC. The results support moving away from a one-size-fits-all understanding of the impact of migration on adolescent development. The utility of contextualizing migration experiences to gain a better understand of who is most likely to struggle or succeed is discussed.

## **Preface**

This dissertation (including the initial design, conception, analyses, and written work) is an original, unpublished intellectual product of the author, M. Gagné. The studies conducted as part of this work were reviewed and approved by the UBC Behavioral Research Ethics Board (BREB) under ethics certificate number H13-00336.

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I am also grateful for the support of the three data stewards, the Ministry of Health, the Ministry of Education, and Citizenship & Immigration Canada, who have allowed me to access the data in order to undertake the study. Please note that all inferences, opinions, and conclusions drawn in this dissertation are those of the author, and do not reflect the opinions or policies of the data stewards.

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## **Dedication**

I dedicate this work to the Syrian refugees – whose stories and struggles formed the worldly landscape within which much of this dissertation was written.

## **Chapter 1: Introduction**

Canada is home to nearly 7 million individuals who were foreign-born – this represents over one-fifth of the total Canadian population (Statistics Canada, 2013). In addition, close to 6 million Canadians (just under one-fifth of the population) have one or more parents who were foreign-born. In all, well over one-third of the Canadian population can be considered a first- or second-generation Canadian (Statistics Canada, 2013). Indeed, Canada is one of the top receiving countries in the world for migrants (both immigrants and refugees), and it has the largest foreign-born population of all the G8 countries (Statistics Canada, 2013). Those who migrate to Canada (i.e., those who are foreign-born) are most likely to settle in the largest Canadian urban centers, with over 60% settling in Toronto, Montreal or Vancouver (Statistics Canada, 2013). Currently, the Philippines, China and India are the top three migration source countries in Canada, and this has been the case since 2004 (Citizenship & Immigration Canada, 2014a).

The province of British Columbia (BC) is the third largest provincial recipient of those who migrate to Canada (BC Statistics, 2011) and the provincial demographic migration trends largely reflect the trends found at the national level. The Philippines, China and India remain the top source countries for those who settle in BC (BC Statistics, 2011).

It is noteworthy that the foreign-born population is substantially younger than the general Canadian population and, as of 2011, there was a 10-year difference in the median age of the two groups (Citizenship & Immigration Canada, 2014a). Indeed, in recent years, one-quarter of all those who migrated to Canada were 19 or younger (Citizenship & Immigration Canada, 2014a). BC Statistics (2011) reported that approximately one in five those who migrate to BC were 14 years of age or younger.

Given that over one-third of Canadians have firsthand experience with migration and subsequent adaptation, it comes as no surprise that the adaptation and integration of those who are new to Canada has been identified as a priority research area (Citizenship and Immigration Canada, 2014b). Despite this, we continue to have few studies focused on understanding the role of migration experiences on young people within a Canadian context and more specifically in British Columbia – particularly those in their adolescent years. A central developmental task facing adolescence is the pursuit of academic achievement and this task is coupled with the growth and challenges associated with other domains of functioning, such as overall well-being (Masten & Powell, 2003; O’Dougherty-Wright & Masten, 2005). Adolescents who are foreign-born have a unique set of experiences associated with migration. Developing our understanding of the role of migration and adaptation experiences on adolescent development is critical, not only to help ensure the well-being of a generation but to ensure the development of a strong and healthy society as a whole.

As such, the overarching objective of the current work was to gain a better understanding of the factors associated with the academic achievement and well-being of foreign-born adolescents (i.e., foreign-born immigrants and refugees) in British Columbia, Canada. This was achieved by way of two studies, both aimed at identifying specific factors in the lives of foreign-born adolescents that explain variations in academic achievement and well-being outcomes. Study 1 leveraged administrative data from the Ministry of Health, Ministry of Education, and Citizenship and Immigration Canada, to look retrospectively at a population-based cohort of foreign-born adolescents in BC over the course of their high school years, in comparison to a random sample of their Canadian-born peers. The study aimed to (a) understand variations in the academic achievement and MSP-reimbursed mental health service utilization trajectories of



foreign-born adolescents over the course of high school, (b) identify migration assets and risks (namely sex, SES, age of arrival, English language learner status, migration class, and country of birth) that predict the academic achievement and MSP-reimbursed mental health service utilization trajectories, and (c) identify the relationship between academic achievement and MSP-reimbursed mental health service utilization for foreign-born adolescents in BC. To follow, Study 2 was a smaller, cross-sectional study with the aim of more closely examining factors associated with adaptation (e.g., academic attitudes, cultural orientation, and social support) in order to help to further explain academic achievement and psychological well-being of foreign-born adolescents in BC.

### **1.1 The Immigrant Paradox**

The discourse surrounding immigration has changed in the literature over the years. Historically, there has been a long-standing view of immigration as burdensome, unhealthy, and generally associated with negative outcomes for the individual and the receiving societies (Sam, Vedder, Liebkind, Neto, & Virta, 2008). Although the outright negative attitudes toward migration have generally subsided in recent years, the notion that migration is detrimental to an individual dominated the literature well into the end of the millennium. This notion, often termed a “straight-line” or assimilationist path of adaptation, reflects the idea that individuals are initially vulnerable after immigrating, but the longer a person spends in a new country, the better off they are (Gordon, 1964; Sam, et al., 2008).

The current waves of immigrants are arriving predominantly from Asia, Latin America, Africa, the Caribbean, and the Middle East (Swartz, Unger, Zamboanga, & Sapocznik, 2010). These newer waves of migrants are more ethnically diverse than previous waves which, in and of itself, has brought forth conjecture that patterns of adaptation may look different for different

groups of immigrants (Fuligni, 1998; Portes & Rumbaut, 2001). In fact, recent research has clearly shown that an assimilationist model of adaptation, does not explain current immigration experiences (Portes & Rumbaut, 2001; Garcia Coll & Marks, 2012). There is an accumulation of research that outlines a contradicting pattern of outcomes, particularly for young people who migrate, and it has led some scholars to articulate a new pattern of adaptation, often labeled the *immigrant paradox* (Garcia Coll & Marks, 2009; Garcia Coll & Marks, 2012; Sam, et al., 2008; Suarez-Orozco, Rhodes, & Milburn, 2009). The immigrant paradox is in direct contrast to an assimilationist model, and suggests that children and adolescents who have immigrated initially do just as well or better on a range of outcomes, despite the multitude of risk factors they face (Crosnoe & Lopez Turley, 2011; Garcia Coll & Marks, 2009). Evidence for such a pattern have been found across several countries, including Canada (Beiser, Hou, Hyman, & Tousignant, 2002; McAndrew et al., 2009), the U.S. (Garcia Coll & Marks, 2009), and Europe (Sam et al., 2008).

These patterns are paradoxical both intuitively and theoretically (Sam et al., 2008) given the cumulative risks that those who migrate to a new country may face. For example, those who migrate can undergo acculturative stress in response to the psychological stressors from adapting to a new culture and learning a new language (Berry, 2006; Hernandez, 2009), which can be compounded by experiences of racism and discrimination (Suarez-Orozco & Suarez-Orozco, 2001). In addition, immigrants tend to be poorer and have less social and economic capital (Suarez-Orozco & Carhill, 2008). Young immigrants are also more likely to attend large inner-city schools and have less knowledge about how the school system works (Garcia Coll & Marks, 2009). Finally, in the U.S. at least, research has shown that young people who migrate are more likely to be exposed to school and community violence (Suarez-Orozco & Suarez-Orozco, 2001).

This multitude of risk factors is more compatible with a straight-line or assimilation pattern of adjustment for immigrants in the sense that we expect that initially those who migrate would show signs of struggle given the multiple barriers they face, but over time, they would learn and adapt, which would be reflected by positive health, behavioural, and academic outcomes (Hernandez, 2009). As noted, however, the outcomes reported for young immigrants are often in direct opposition with what might be predicted given our traditional notions of what it means to be *at-risk* (e.g., Beiser, et al., 2002; Leventhal, Xue, & Brooks-Gunn, 2006; Suarez-Orozco et al., 2009). Young people who migrate seem to be thriving initially, based upon a number of developmental indicators (Fuligni, 1998; Garcia Coll & Marks, 2009).

This pattern of success paints a picture of prosperity for those who migrate as a whole, however the emergence of more cross-generational and within-generation longitudinal research has begun to reveal a second, more troubling side to the immigrant paradox phenomenon (e.g., Garcia Coll & Marks, 2009; Han, 2008; Hernandez & Charney, 1998; Suarez-Orozco & Suarez-Orozco, 1995; Suarez-Orozco et al., 2009). Despite initial positive outcomes, there is a growing body of evidence revealing a pattern of decline over time for young people who migrate, and this decline has been observed both within generations (i.e., in individuals over time) and across generations (i.e., between first-, second-, and subsequent-generations of immigrants; Garcia Coll & Marks, 2012; Mark, Ejesi, & Garcia Coll, 2014). That is to say, the more time spent in the host country, the worse off some seem to be, across a range of developmental outcomes (Garcia Coll & Marks, 2012).

The idea of an immigrant paradox is not new, and was first introduced in a review of the health literature in 1986 (Markides & Coreil, 1986). These researchers found that despite lower socioeconomic status (SES), those who migrated had more favorable status on a range of health

outcomes. However, despite these earlier indications of the existence of such a pattern, the immigrant paradox has only recently begun to be widely acknowledged (Sam et al., 2008). This acknowledgement has emerged as a greater number of studies, across a range of domains, have found evidence consistent with the notion of an immigrant paradox (Garcia Coll & Marks, 2009). As research continues to accumulate with an eye to the immigrant paradox across contexts and domains of functioning, there is a corresponding acknowledgement that there are indeed great variations in findings, and, as to whether or not an immigrant paradox exists – the current state of affairs seems to suggest that “it depends” (Fuligni, 2012, p. 299) and “what we do not know or understand about the immigrant paradox still outweighs what we do know” (Crosnoe, 2012, p. 73). The current work aims to address the complexity of the immigrant paradox by investigating whether foreign-born adolescents in BC have academic achievement and mental health outcomes that are consistent with the immigrant paradox and moreover, by identifying factors that may explain outcomes that are both consistent and inconsistent with this phenomenon. Although the interest of the current work is on the academic and mental health domains of functioning for foreign-born adolescents, a brief review of the immigrant paradox across the behavioural, physical health, mental health, and academic domains follows.

**Behavioural outcomes.** The strongest and most consistent evidence confirming the immigrant paradox appear in studies that are investigating behavioural outcomes (Garcia Coll & Marks, 2012; Marks et al., 2014). Foreign-born youth have been found less likely to use multiple controlled substances (Harris, 1999), to be involved in delinquent or violent acts (Bui, 2012; Harris, 1999), and to engage in sex and sexual risk behaviours (Harris, 1999; Raffaelli, Kang, & Guarini, 2012). Note that much of this research has shown that there is an increased tendency to be engaged in risky behaviours across generations (Marks et al., 2014), but there is also evidence

to indicate that this pattern exists within a generation: Young people who immigrate at a later age are also less likely to engage in problem behaviours than those who arrive when they were younger (Fuligni, 1998) and problem behaviours tend to increase with length of stay (Beiser et al., 2002). These findings fuel the paradoxical notion that the more time those who migrate spend in a country, the worse off they will be, both within and across generations.

There are a number of studies that have illustrated the reasons why adolescents who are foreign-born are less likely to engage in risky behaviours. The profound sense of obligation that young people who immigrate feel toward their families is well documented in the literature (Fuligni, 1998). Particularly for those individuals from Asian and Latin American backgrounds, there is an emphasis on cultural collectivism which manifests in a sense of responsibility and actions that are in accordance with what is best for the family unit (Fuligni, 1998; 2012). This sense of family obligation has been described as magnified for young immigrants in light of the sacrifice made by their parents to bring them to the new country (Yoo & Kim, 2010). This sense of responsibility is thought to be a primary factor that prevents young people who are foreign-born from engaging in risky behaviours (Fuligni, 1998). Furthermore, family obligation such as time spent helping the family with a variety of tasks at home and acting as language or cultural brokers in both formal and informal tasks often precludes foreign-born adolescents from engaging in risky behaviours because they are otherwise engaged (Zhou, 1997). Finally, one of the primary ways young people who migrate feel they can contribute to their families is by doing well academically (Caplan, Choy, & Whitmore, 1991; Fuligni, 1998). Newcomer students on average spend significantly more time on school work, doing homework and studying (Fuligni, 1998) which is perhaps another reason that they are less likely to be involved in delinquent or risky behaviours.

**Health.** As noted above, the idea of an immigrant paradox was first discussed in the health literature by Markides & Coreil (1986) in a study about the health of Latinos in the U.S. Despite the number of risk factors that were attached to those who had immigrated, the group showed more positive health on a host of indicators, including lower infant mortality, longer life expectancy, lower mortality from cardiovascular disease and cancer. While Markides & Coreil termed the phenomenon the *epidemiological paradox* at the time of the 1986 paper, it has also been termed the *healthy immigrant effect* in the health literature, and now most commonly, the *immigrant paradox* (although the *healthy immigrant effect* still remains widely used as well). Across the three terms, the underlying phenomenon remains consistent: Immigrants have relatively better health than their native-born peers but show a decline over time in the host country (Harris, 1999; Hernandez, Denton, Macartney & Blanshard, 2012). Evidence for the paradox in the health literature (described below) has been documented not only in the U.S., but there is evidence for the paradox in Canada (Chen, Ng, & Wilkins, 1996; McDonald & Kennedy, 2004; Perez, 2002).

There is substantial evidence to suggest that young people who immigrate are physically healthier than their native-born peers (Harris, 1999; Hernandez, 1999; Mendoza & Dixon, 1999). Those who immigrate have been found to have a lower risk of mortality and a lower risk of low infant birth weight (Singh & Siahpush, 2002). Those who are foreign-born have also been found to have less chronic health conditions (including asthma, back pain, high blood pressure, migraines, arthritis), at least initially (McDonald & Kennedy, 2004). Those who immigrate are less likely to be obese and this seems to be the case across racial/ethnic groups, age, and gender (Singh, Kogan, & Yu, 2009; Sussner, Lindsay, Greaney, & Peterson, 2008). In fact, those who are native-born have in some cases been found to have four times the risk of obesity than their

immigrant counterparts (Kaplan, Huguet, Newsom, & McFarland, 2004). However, in keeping with other health outcomes, over time in the host country there is increased incidence of obesity (Antecol & Bedard, 2006; Lauderdale & Rathouz, 2000; Park, Myers, Kao, & Min, 2009).

The decrease in health status over time in the host country is a troubling trend although the majority of health researchers have presented the decrease as a *convergence* in health status, meaning those who immigrate simply narrow the gap in health status between themselves and the native-born population (Dean & Wilson, 2010). Interestingly however, Park and colleagues (2009) demonstrate that *convergence* does not always happen. More specifically, they tracked levels of obesity in immigrants and nonimmigrants over time, and they discovered that while immigrants did have increasing rates of obesity over time, their rates were slower than those born in the host country and as a result, over the course of ten years, the immigrant population never did converge with the native-born population. Importantly, these results are based upon adults who have immigrated and as the authors admit, the pattern of divergence may not hold for children or adolescents as they have a tendency to assimilate or adopt the native culture faster and more readily (Park et al., 2009). This illustrates one of the major limitations of the health literature, namely, a lack of research representing the unique developmental experiences in childhood and adolescence for those who immigrate.

In making sense of the good initial health status of immigrants, the explanation of self-selection is often raised, which refers to the notion that the process of immigration itself requires a certain level of physical and financial robustness and therefore individuals and their families who immigrate are more likely to be healthy if they are able to jump the hurdles required of them. In addition to this, there is often a health screening process required for entering a country (Laroche, 2000; McDonald & Kennedy, 2004). While these factors may explain the positive

initial health status of those who migrate, other researchers have attempted to flesh out the reasons for the decline in health status over time. Some cite acculturation as a reason for the decline. That is, the longer a person spends in the host country, the more they take on the unhealthy behaviours of the host country (Hyman, 2001), such as unhealthy eating, smoking and drinking habits (Frisbie, Youngtae, & Hummer, 2001). Qualitative researchers have found that adopting the bad habits of the majority population may not fully account for the findings as their participants perceived their decline in health to be due to aging, as well as the stress of the immigration process over the years (Dean & Wilson, 2010).

It is also necessary to underline differential access to health care for this group in order to understand the health outcomes of those who migrate. The declining health of those who migrate is often explained by poorer access to health care services (e.g., Muggah, Dahrouge, & Hogg, 2012; Newbold, 2005). Indeed, a number of barriers to the use of the health care system have been documented including language and cultural differences, a lack of information, less awareness of available resources (McDonald & Kennedy, 2004) and a general unease and distrust of the system (Newbold, 2005). There is mounting evidence to suggest that certain groups of migrants are more likely to have barriers to accessing health care than others, based on factors such as country of origin (Durbin, Moineddin, Lin, Steele, & Glazier, 2015) and refugee status (Miedema, Hamilton, & Easley, 2008). Despite the knowledge gains made in this area, there continues to be a paucity of work looking at health care access for foreign-born adolescents. Indeed, understanding access to health services for young people in the Canadian context has been identified as a critical dimension of the mental health status of those who migrate that requires further research (Guruge & Butt, 2015).



**Mental health.** There is a significant amount of attention paid in the literature to the stress associated with navigating between two cultures, generally termed *acculturative stress* (Berry, 2006). Adolescents are thought to be especially vulnerable during migration transitions because acculturative stress may be compounded by the loss of important social ties, which are particularly important during this developmental period (Suarez-Orozco, Suarez-Orozco & Todorova, 2008). Notably however, the American Psychological Association (APA; 2012) in a report from the APA Presidential Task Force on Immigration, asserted that although acculturative stress is an important challenge facing foreign-born adolescents, it should not be construed as causing higher levels of mental health problems, in comparison to the general population. In fact, in an immigrant paradox vein, there is evidence to indicate positive mental health outcomes for foreign-born adolescents, at least initially (Georgiades, Boyle, & Duku, 2007; Harker, 2001; Hough, Hazen, Soriano, Wood, McCabe & Yeh, 2002). Harris (1999), utilizing a nationally representative sample of adolescents in the U.S., found higher psychological well-being and lower depressive symptoms for foreign-born adolescents (Harker, 2001 had similar findings using the same dataset). By contrast, Kao (1999) made use of another nationally representative sample in the U.S. and found that foreign-born adolescents were more likely to experience less control over their lives (i.e., lower self-efficacy) and have higher feelings of alienation. Despite this, the same study found no differences in self-esteem for foreign-born adolescents in comparison to their native-born peers (Kao, 1999).

In the Canadian context, Georgiades, Boyle, & Duku (2007) found that children who were recent immigrants (i.e., those in Canada for less than 15 years) had the lowest levels of internalizing and externalizing behaviour problems, as reported by their parents and teachers. Similarly, lower internalizing and externalizing problems were found in a Canadian study of

foreign-born children (Beiser et al., 2002). In later work, Beiser and colleagues (2010) demonstrated that factors associated with children's migration experiences, such as country of origin and linguistic fluency, explained a significant amount of the variation in predicting emotional problems (Beiser et al., 2010).

There are two important gaps in the literature to note: first, in the Canadian context, there is a dearth of longitudinal studies focused on the mental health outcomes of those who are foreign-born during the period of adolescence; and second, studies investigating the mental health outcomes for foreign-born adolescents are based almost entirely on self-, teacher-, or parent-reported indicators of mental health status. As described above, to gain a more complete picture of the health (including mental health) status of foreign-born adolescents, it is also important to capture mental health service utilization. The present work will address both gaps in the literature by investigating the mental health of foreign-born adolescents in the Canadian context using two different approaches. Study 1 looks specifically at mental health service use for foreign-born adolescents (in comparison to their Canadian-born peers) and Study 2 captures self-reported indicators of psychological well-being (satisfaction with life and depressive symptoms).

**Academic achievement.** There is a growing body of research that has explored academic outcomes and found evidence consistent with the immigrant paradox (e.g. Fuligni, 1997; Han, 2006; Kao & Tienda, 1995; Szalacha, Marks, Lamarre, & Garcia-Coll, 2005). This body of work suggests that, generally-speaking, young people who migrate have academic outcomes that are the same as or better than later generations of immigrants or nonimmigrants, despite all of the challenges that they may face. While much of this work has been conducted across-generations, there is some longitudinal research evidence for within-generation academic decline (e.g.,

Suarez-Orozco et al., 2010). Evidence for the immigrant paradox in the academic domain has been found in Canada (Georgiades et al., 2007; McAndrew et al., 2009), in Europe (Sam et al., 2008), and the US (Fuligni, 1997; Garcia Coll & Marks, 2009; Han, 2008; Hernandez & Charney, 1998; Kao & Tienda, 1995; Suarez-Orozco, Gaytan, Bang, Pakes, O'Connor, & Rhodes, 2010).

Note, however, that researchers continue to emphasize that, underlying these overarching patterns, are findings to suggest a significant amount of diversity in academic outcomes (McAndrew et al., 2009; Suarez-Orozco et al., 2010; Szalacha et al., 2005;). More specifically, while a remarkable proportion of those who migrate do initially do well academically, there are still many who do not (Suarez-Orozco et al., 2010; Szalacha et al., 2005). Important gains have been made in understanding the processes underlying the initial academic achievement of those who are foreign-born in comparison to their native-born counterparts. For instance, we know that those who immigrate, in comparison to nonimmigrants, tend to have certain factors that are conducive to academic success such as higher aspirations and attitudes (e.g., Fuligni, 1997; 2001), strong family ties (e.g., Fuligni & Yoshikawa, 2004; Hernandez et al., 2012) as well as strong community ties (e.g., Georgiades et al., 2007).

Researchers have indeed covered a lot of ground in understanding factors that set those who are foreign-born apart from subsequent generations (e.g., second-generation immigrants and nonimmigrants). However, we know relatively little about within-group differences in academic achievement. Furthermore, much of the research that has aimed at understanding within-group differences in academic outcomes has thus far focused on limited within-group categorizations, such as ethnic/racial group differences. This work has contributed important insights into within-group differences in achievement – namely that students from Asia (and China, in particular)

tend to excel academically; whereas those from Latin American countries tend to exhibit lower levels of academic achievement (Leventhal et al., 2006; McAndrew et al., 2009; Suarez-Orozco et al., 2010). With that said, measuring within-group variation in academic achievement based on one dimension, such as racial/ethnic groups, could be obscuring other critical group differences or, alternatively, highlighting group differences that would be best explained by greater complexity (Garcia Coll & Marks, 2009).

Given the gaps in the literature, there is clearly more research required to gain a more multi-faceted understanding of the factors that predict variations in academic achievement for adolescents who are foreign-born. Study 1 and 2 will address this by accounting for a wide-range of factors thought to contribute to the within-group variation in academic achievement for adolescents who are foreign-born.

## **1.2 Immigrant Paradox - Summary**

As studies and findings associated with the immigration paradox begin to proliferate, a number of knowledge gaps in the literature have emerged. First, documenting the immigrant paradox is an important and useful step in understanding the adaptation outcomes of those who migrate. However, overarching findings have the potential to mask important group differences in migration (Schwartz, Unger, Zamboanga, & Szapocnik, 2010; Suarez-Orozco & Carhill, 2008). For this reason, we must be careful to bring light to the varied patterns of adaptation that underlie the general trend by avoiding the treatment of migration as a homogenous experience. Many researchers who have found evidence consistent with the immigrant paradox have also noted a broader range of outcomes (McAndrew et al., 2009; Szalacha et al., 2005; Suarez-Orozco et al., 2010) and researchers continue to assert that indeed, one size does not fit all (Garcia Coll & Mark, 2009). The current work aims to delineate variations in the outcomes of adolescents

who are foreign-born in Canada rather than distilling results to a mean. Study 1 will look at variations in trajectories over high school whereas Study 2 will focus cross-sectionally on variations in outcomes at one point in time.

Second, researchers interested in the impact of migration on development are beginning to call for further research that unpacks the findings associated with the immigrant paradox (for a recent expanded discussion, see Marks et al., 2014). Presenting results consistent with the immigrant paradox is of limited use unless it is coupled with findings that begin to explain the paradoxical pattern. Not only do we need to understand factors that imply risk, but there remains a paucity of research that bring light to the strengths brought by young people who migrate (Garcia Coll & Marks, 2009; Marks et al., 2014; Zhou et al., 2012) and there is a growing awareness that we still have yet to understand what uniquely promotes positive adaptation for foreign-born adolescents (Reitz, Motti-Stefanidi, & Assendorpf, 2014). Within this, of particular interest is to begin to understand the unique factors (both positive and negative) that predict the varied outcomes of foreign-born adolescents. To address this, Study 1 and 2 are aimed at identifying risks and assets in the lives of foreign-born adolescents in BC. As will be discussed in greater detail, Study 1 focused on factors proximal to the migration experience (e.g., age of arrival and migration status) and Study 2 focused with greater depth on a range of factors associated with adaptation for foreign-born adolescents in BC (e.g., self-efficacy and school belonging).

Third, domain-specific research documenting the outcomes of foreign-born adolescents still prevails. For this reason, our knowledge with respect to positive adaptation for young people who migrate is still understood mainly within the confines of each domain of functioning (e.g., academic or mental health domains). A much more nuanced and sophisticated understanding of

the role of migration on the development of foreign-born adolescents stands to be gained from studies that take into account multiple domains of functioning. The current work addressed this by taking into account two salient domains of functioning during adolescence, academic achievement and well-being. Whereas both studies took academic achievement into consideration, the studies explored well-being in different ways. Study 1 utilized administrative data to focus on BC Medical Services Plan (MSP)-reimbursed mental health service utilization over the high school years. By contrast, Study 2 focused on self-reported indicators of psychological well-being (namely, satisfaction with life and depressive symptoms).

The forthcoming sections outline theory and a framework that the current study draws upon to address these stated gaps in the literature. The discussion starts by outlining segmented assimilation theory as a way to comprehend varied migration outcomes, followed by an extended discussion on how factors predicting migration outcomes can be optimally positioned within a resilience framework. Finally, Garcia Coll and colleague's (1996) *integrative model for the study of developmental competencies in minority children* is drawn upon in order to identify potential factors impacting the adaptation outcomes of young people who migrate.

### **1.3 Segmented Assimilation Theory**

In critical response to the straight-line assimilation paradigm that has historically dominated the literature, Portes & Zhou (1993) introduced a theory of *segmented assimilation*. The theory recognizes that American society<sup>1</sup> is diverse, stratified, and unequal, which means that migration experiences and adaptation outcomes will be varied (Portes & Zhou, 1993). This theory continues to be relevant even as patterns consistent with an immigrant paradox dominate

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<sup>1</sup> While segmented assimilation theory was developed with a U.S. context in mind, the theory is relevant to the Canadian context.

the field. As discussed, while an overarching pattern consistent with the immigrant paradox prevails in extant research, there continues to be evidence for a diverse set of paths during adolescence that will ultimately lead to stratified and unequal adaptation in the host country (i.e., segmented assimilation). Of particular importance is in understanding the factors that lead to divergent adaptation experiences. Portes & Rumbaut (2001) contend that we can look to a number of factors that will lead to divergent migration outcomes such as human capital, family structures, and one's mode of entry into the new society. These factors may also have utility in explaining patterns consistent with the immigrant paradox. In keeping with segmented assimilation theory, it was hypothesized that adolescents in BC who are foreign-born would have varied academic and mental health adaptation outcomes and that a number of factors associated with migration and adaptation experiences would predict this variation. Study 1 utilized Group-Based Trajectory Modeling (GBTM), which is a form of mixture modeling that statistically allows for the detection of multiple and varied trajectories. The benefit of using GBTM is that it doesn't distill trajectories to an average based on a priori categorizations, thereby honoring segmented assimilation by allowing the diversity of the trajectories to emerge.

#### **1.4 Resilience Framework**

The current studies adopted a resilience framework to understand various outcomes of academic achievement and well-being for immigrant youth. Paradoxical patterns of adaptation, or displaying high levels of competence in the face of adversity, have not only been found for young people who migrate. In fact, pioneering researchers have been finding cases of similar patterns of resilience for decades (Garmezy, 1974; Luthar, 2006; Rutter, 1979; Werner & Smith, 1982). More specifically, there is evidence for children developing well despite exposure to adversity across a number of childhood developmental contexts, such as maltreatment (Cicchetti

& Toth, 1995), parental depression (Hammen, 2003), and poverty (Cauce, Stewart, Rodriguez, Cochran, & Ginzler, 2003). Resilience is defined as “a class of phenomena characterized by good outcomes in spite of serious threats to adaptation or development” (Masten, 2001, p. 228). It is generally thought to be characterized by two co-existing conditions: First, the presence of adversity or challenging life conditions (often articulated as ‘risk’); and second, positive adaptation (which may be observed in one or more domains of functioning; Luthar, Doernberger, & Zigler, 1993). Resilience is an inferred construct; it is not directly measured, but rather is applied to the combined presence of adversity and positive adaptation in a given context (Luthar, 2006).

Identifying the construct of resilience requires making an inference as to what qualifies as adversity or a challenging life condition (risk factor), and furthermore, what qualifies as positive adaptation (Masten & Coatsworth, 1998; Masten & Powell, 2003). Risk factors are generally considered to be indicated by an increased probability of some negative outcome (Luthar, 2006; Masten, 2001; O’Dougherty-Wright & Masten, 2005). The definition of ‘risk’ in resiliency research has run the spectrum from socioeconomic disadvantage (Werner & Smith, 1992, Luthar, 1999), to parental mental illness (Masten & Coatsworth, 1998), to community violence (Luthar & Goldstein, 2004). Historically, researchers have painted migration as a risk in the healthy development of children and adolescents (Sam et al., 2008). Indeed, as identified above, the list of challenges that can be associated with migration experiences is extensive. However, avoiding the presentation of migration as an across-the-board risk factor is important if we want to capture critical individual and group differences in migration on adaptation. In unpacking migration further, we may find that some factors associated with migration contribute to positive



adaptation. By positioning migration as a risk, in and of itself, we may be diluting the most powerful predictors of both positive and negative adaptation for those who migrate.

Instead, migration may be more appropriately positioned as a ‘risk marker’. A ‘risk marker’ can be used to illustrate factors that may not lead to negative outcomes themselves but can be instrumental in signaling processes or mechanisms that can confer vulnerability and in turn, affect outcomes negatively (O’Connor & Rutter, 1996). Positioning migration as a risk marker leaves room to study the specific factors proximal to the migration experience that can lead to positive adaptation outcomes as well as negative adaptation outcomes.

**Proximal migration factors.** One limitation of the existing body of resilience research is that it is rarely situated in cultural context, although new work in this area highlights the importance of contextual specificity (O’Dougherty-Wright & Masten, 2005). Recent studies have illustrated that in the context of a given stressor, groups differ in their processes of adaptation and these processes are often grounded within their social and cultural contexts (O’Dougherty-Wright & Masten, 2005). Migration research has also been criticized for its tendency to treat migration as a unidimensional experience (Schwartz et al., 2010; Suarez-Orozco & Carhill, 2008). Incorporating factors that are proximal to the migration experience (e.g., migration class, age of arrival, country of origin, and socioeconomic status) will lead to a more nuanced understanding of this phenomenon.

In addition, by positioning migration as a risk marker rather than a risk – the factors proximal to migration experiences can be conceptualized as either risks or assets. As previously indicated, a risk factor can be statistically defined as an increased probability of some negative outcome (Masten, 2001; O’Dougherty-Wright & Masten, 2005). In contrast, an *asset* is a factor associated with an increased probability of positive outcomes (Masten, 2001). In many cases,

risk can be thought of as one end of a continuum or gradient and asset at the other end (Masten, 2001). This means that in many cases a person with a high amount of this factor would have a higher probability of positive adaptation and a person with a low amount of this factor would have a high probability of negative adaptation outcomes (or vice versa). The current work positions migration as a risk marker thereby leaving space to study the specific risks and assets proximal to the migration experiences of foreign-born adolescents in BC.

**Positive adaptation.** Positive adaptation is typically captured in terms of competencies. Competencies are indicators of success in specific developmental tasks for individuals of a particular age and within a certain cultural and historical context (O'Dougherty-Wright & Masten, 2005). This definition implies that the competencies reflecting positive adaptation need to hinge upon context and developmental stage. One of the most salient developmental tasks facing children and adolescents within the context of North America is achieving academic competence (Masten & Powell, 2003). In the case of young people who migrate, navigating school life and achieving academic competence is not only seen as the key to success, but a primary way by which young people who migrate feel they can contribute to their families (Fuligni, 1997). We know that schools act as a major site of reception and integration for young people who migrate (Stewart, 2011, p. 86) and they are in a powerful position to help to meet the needs of young people who migrate (Citizenship and Immigration Canada, 2006). Thus, given the centrality of the school context and academic achievement in the lives of foreign-born adolescents, accounting for academic achievement as an indicator of positive adaptation is of particular relevance, and is a focus of the current study.

Despite the prominent role of academic achievement in the lives of young people who migrate, there is a need to move past simply attending to academic domains of adaptation to

understanding the status of other domains of functioning. This is important because individuals can be competent in one adjustment domain but not another (O'Dougherty-Wright & Masten, 2005). For example, there is evidence for resilience manifesting in an academic domain more commonly than in a social domain of functioning (Kaufman, Cook, Arny, Jones, & Pittinsky, 1994). Similarly, it is common for adolescents to display signs of outward adaptation (e.g., high academic or athletic achievement), but nevertheless be dealing with internal psychological struggles, such as depression (Luthar, Doernberger, & Zigler, 1993; Luthar & Zelazo, 2003). Indeed, for young people who migrate, researchers are starting to caution against assuming that doing well in the academic domain will be associated with psychological well-being (Qin, 2008).

In the case of young people who migrate, the majority of research has focused on academic achievement as the prime indicator of positive adaptation (Qin, 2008), although there is some work that has explored the psychological domain of functioning for young people who migrate with some results to suggest poorer psychological outcomes for those who migrate (e.g., Chiu & Ring, 1998; Greene, Way, & Pahl, 2006; Way & Chen, 2000) and other work finding largely positive psychological outcomes for those who migrate (e.g., Georgiades, Boyle, & Duku, 2007; Harker, 2001; Hough, Hazen, Soriano, Wood, McCabe & Yeh, 2002). To add complexity to this, some researchers are beginning to wrestle with the notion that high academic achievement may be associated with lower psychological well-being due to the pressure individuals put on themselves to achieve academically (Qin, Way, & Mukherjee, 2008). This highlights the importance of investigating academic competence in tangent with psychological outcomes for those who migrate, which is a strength of the current study.

**Ontogenetic stability.** Importantly, individuals can be more resilient at different points in their lives and may demonstrate changing patterns of competence over time (O'Dougherty-

Wright & Masten, 2005). Empirical attention to ontogenetic instability is critical to understanding who it is that thrives over time, shows stability, or experiences declining outcomes. This is relevant to resilience theory, but also to understanding the immigrant paradox (i.e., why it seems that for some people, the longer they stay in a country, the worse off they are; e.g., Garcia Coll & Marks, 2012). Longitudinal studies are important for elucidating within-individual variation in trajectories as well as for identifying what factors predict whether an individual will be on an adaptive or maladaptive trajectory (O'Dougherty-Wright & Masten, 2005). The need for more longitudinal research has recently been highlighted as critical to advancing our understanding of within-generation outcomes for those who migrate (Marks et al., 2014). Study 1, which incorporated a longitudinal design, addresses this need.

### **An integrative model for studying the developmental competencies of minority youth**

Research within a resilience framework is commonly guided by broad developmental theories (Luthar, Cicchetti & Becker, 2000) such as the ecological-transactional model of development (Cicchetti & Lynch, 1993). Luthar (1999) warns, however, that researchers need to take care to ensure that the theoretical models chosen for studies of resilience are appropriate for their populations of interest. In identifying factors impacting the developmental competencies of young people who migrate, the integrative model for studying the developmental competencies of minority youth can serve as a useful guide (Garcia Coll et al., 1996). As with segmented assimilation theory, this model draws heavily upon the concept of social stratification and places factors such as social position at the forefront in understanding the mechanisms that lead to competency for minority groups (Garcia Coll et al., 1996). The model delineates a number of salient constructs for the development of minority youth: social position (e.g., gender and ethnic background), racism and discrimination, segregation (e.g., residential and psychological),

promoting/inhibiting environments (e.g., schools), adaptive culture (e.g., traditions and legacies; values and attitudes), child characteristics (e.g., age, temperament), family values (e.g., family structure and roles), each of which are positioned in the model as influencing, directly or indirectly, the developmental competencies (e.g., cognitive, academic, social and emotional) of minority youth. In identifying salient assets and risks in the lives of foreign-born adolescents, the present work draws mainly on three of the identified constructs as they influence developmental competency (indicated by academic achievement and mental health): Social position, promoting/inhibiting environments, and adaptive culture.

Garcia Coll and colleagues' (1996) model brings to the forefront the construct of social position and it is highlighted as being fundamental in explaining the developmental competencies of minority youth. They argue that certain factors that can socially define minority children may contribute to social stratification, or the sorting of members in society based on these characteristics, often because of underlying systems of discrimination and segregation (Garcia Coll et al., 1996). Theoretically, this is consistent with segmented assimilation theory which argues that new members of society (i.e., those who have migrated) will adapt in a stratified, unequal manner, based on certain characteristics or migration factors (Portes & Rumbaut, 2001). For young people who migrate to BC, there are many factors that may impact their social position and subsequent social stratification and these include age, age of arrival, sex, socioeconomic status, English language ability, ethnic background, and migration class. These factors are considered highly relevant to the social position of foreign-born adolescents in the current study and will be described in greater detail in the forthcoming chapters.

Promoting/inhibiting environments are recognized as particularly relevant in understanding the development of minority youth (Garcia Coll et al., 1996). It is argued that

minority youth may be differentially impacted by their environments and as such have different needs than their non-minority counterparts. For this reason, special attention must be paid to how the particular environments within which young people who migrate may find themselves serve to promote and inhibit their positive adaptation. For young people who migrate in particular, there is some evidence that they will be more strongly impacted by the supports they receive in their environments (Gagné, Shapka, Law, 2012; Suarez-Orozco et al., 2009).

Adaptive culture represents the specific goals, values, attitudes, and behaviours that are thought to be held by minority groups in response to systems of social stratification and inequality (Garcia Coll et al., 1996). Adaptive culture for foreign-born adolescents may manifest in particular ways. For example, we know that young people who migrate and their parents often place an emphasis on academic achievement as a strategy for succeeding in a new country (Fuligni, 1998; 2012). Also, those who migrate may interact with their native-born and mainstream culture in certain ways and develop particular cultural orientations as mechanisms for ensuring positive adaptation (LaFromboise, Coleman & Gerton, 1993). Factors associated with adaptive culture, particularly attitudes towards school and cultural orientations are seen as particularly salient in understanding the developmental competencies and adaptation of foreign-born adolescents to BC and will be taken into consideration and discussed extensively in Study 2.

In summary, the current work is fundamentally based on segmented assimilation theory – the notion that those who are foreign-born will follow varied paths of adaptation in their new country and that there are a number of salient factors associated with migration and adaptation experiences that will lead to this variation and stratification. In identifying the salient factors that will lead to variations in outcomes for foreign-born adolescents in BC, the current work utilized

a resilience framework and positioned factors proximal to migration and adaptation experiences as risks or assets. Finally, the studies further drew upon the integrative model for studying the developmental competencies of minority youth in order to identify the particular factors (potential assets and risks) thought to influence the developmental competencies of foreign-born adolescents in BC.

## **1.5 The Current Studies**

This overview of the literature highlights that our understanding of the immigrant paradox could be greatly enhanced by (1) having a better understanding of the varied developmental trajectories of young people who migrate; (2) gaining a greater understanding of the factors that undergird both positive and negative adaptation outcomes; and (3) taking a closer look at the relationship across multiple domains of functioning, namely the mental health and academic domains. To this end, in a series of two studies, the present work aimed to go beyond simply reporting adaptation outcomes by delving into a more complex understanding of the role of migration in the academic achievement and well-being outcomes of foreign-born adolescents.

Study 1 utilized administrative records to look retrospectively at a population-based cohort of foreign-born adolescents in BC over the course of their high school years (Grades 10-12), in comparison to a random sample of their Canadian-born peers. The objectives of Study 1 were twofold: First, to understand variations in the academic and MSP-reimbursed mental health service utilization trajectories for foreign-born adolescents; and second, to identify assets and risks predicting these trajectories. The following research questions guided Study 1:

1. How can the trajectories for academic achievement and MSP-reimbursed mental health service utilization of foreign-born adolescent in BC be characterized over the course of high school?

2. How do sex, age, age of arrival, English language ability, socioeconomic status, migration class, and birth country impact the academic achievement and MSP-reimbursed mental health service utilization trajectories of foreign-born adolescents in BC over the course of high school?
3. What is the relationship between the academic achievement trajectories and MSP-reimbursed mental health service utilization trajectories for foreign-born adolescents in BC, over the course of high school?

Study 2 was a cross-sectional study that intended to build upon Study 1 to gain a deeper understanding of the factors associated with adaptation in BC for foreign-born adolescents. Specifically, it involved a researcher-collected sample of foreign-born adolescents in BC. The objective of Study 2 was to investigate adaptation assets and risks that predict the academic achievement and psychological well-being of adolescents who are those who migrate to BC. This study focused on three overarching groups of adaptation factors, (1) academic attitudes, (2) cultural orientation, and (3) social support. The study was guided by three research questions:

1. To what extent do the factors associated with academic attitudes act as assets or risks in the academic achievement (English and math grade) and psychological well-being (satisfaction with life and depressive symptoms) for foreign-born adolescents to BC, taking into account age, gender, and racial/ethnic background?
2. To what extent do the factors associated with cultural orientation act as assets or risks in the academic achievement (English and math grade) and psychological well-being (satisfaction with life and depressive symptoms) for foreign-born adolescents to BC, taking into account age, gender, and racial/ethnic background?



3. To what extent do the factors associated with social support act as assets or risks in the academic achievement (English and math grade) and psychological well-being (satisfaction with life and depressive symptoms) for foreign-born adolescents to BC, taking into account age, gender, and racial/ethnic background?

Together, the studies are expected to enhance our knowledge of the role of migration and adaptation experiences on academic achievement and well-being during adolescence. With the notion of segmented assimilation theory at the core, the two studies are expected to contribute to our understanding of the variations in the academic achievement and well-being of foreign-born adolescents in BC by investigating the specific assets and risks proximal to migration experiences (Study 1) and adaptation experiences (Study 2) that explain these outcomes. These findings are expected to make a significant contribution to the literature in a number of ways: It is the first known research in the province of BC that is able to characterize the variations in academic and MSP-reimbursed mental health service utilization outcomes of foreign-born adolescents at the population level. The present work emphasizes the plurality of migration and adaptation experiences, and by doing so, it will contribute to the literature by identifying potential risks and assets that may be associated with specific migration experiences. Finally, the studies are expected to contribute to our understanding of the inter-connectedness of the academic achievement and well-being domains of functioning for foreign-born adolescents. Together, it is expected that the knowledge gained from the present studies will help develop a more nuanced understanding of the impact of migration and adaptation experiences on adolescent development, namely in the domains of academic achievement and well-being, whereby we are in a better position to act in ways that are more tailored, pointed, and impactful.

## **Chapter 2: Understanding Variations in the Trajectories of Academic Achievement and MSP-Reimbursed Mental Health Service Utilization of Foreign-born Adolescents in British Columbia, Canada: A Population-based Cohort Study**

### **2.1 Introduction**

The previous chapter discussed the immigrant paradox at length – the notion that a very common pattern of adaptation for adolescents who immigrate is to initially do well (and in many cases better than their native-born peers; Fuligni, 1997; Garcia Coll & Marks, 2009; Hernandez, 1999; Kao & Tienda, 1995; Marks et al., 2014; Portes & Rumbaut, 1996), but over time there is evidence for deteriorating outcomes (and this pattern of deterioration has been found both within and between generations; Garcia Coll & Marks, 2012). Although this pattern continues to emerge in studies with surprising consistency, there is an increased call for research that further contextualizes the immigrant paradox (Qin, 2008) in order to gain a greater depth of understanding of the conditions under which positive and negative adaptation arise for adolescents who migrate (e.g., Marks et al., 2014). For example, there is a continued awareness that there are gaps in our knowledge of how the immigrant paradox applies across domains of functioning, as well as how it plays out over time (Garcia Coll & Marks, 2012; Marks et al., 2014). To address these gaps in the literature, the present longitudinal, population-based study utilized administrative data from the province of British Columbia, Canada, to focus on adolescents in their high school years, and aimed to: (1) characterize the varying academic achievement and MSP-reimbursed mental health service utilization (i.e., documented visits to a mental health practitioner fully or partially reimbursed under the BC Medical Services Plan)

trajectories for foreign-born adolescents to BC; (2) identify assets and risks that contribute to the resulting academic achievement and MSP-reimbursed mental health service utilization trajectories; and (3) examine the relationship between the identified academic achievement and MSP-reimbursed mental health service utilization trajectories for adolescents who are new to BC.

### **2.1.1 Academic Achievement**

Although evidence continues to mount suggesting that adolescents who migrate are generally doing well at school, at least initially (e.g., Crosnoe & Lopez Turley, 2011; McAndrew et al., 2009; Szalacha, Marks, Lamarre & Garcia Coll, 2005; Suarez-Orozco, Gaytan, Bang, Pakes, O'Connor, & Rhodes, 2010), these same studies also often find diversity in outcomes for those who migrate (McAndrew et al., 2009; Szalacha et al., 2005; Suarez-Orozco et al., 2010). For example, Suarez-Orozco and colleagues (2010) undertook a 5-year longitudinal study on the academic trajectories of immigrant youth and illustrated varying patterns of achievement for immigrant youth over time. In fact, the authors identified several separate academic trajectories for those who migrate. Whereas a quarter of the participants ( $N = 309$ ) did very well and managed to maintain an average GPA of 3.5 over the course of the five years (Suarez-Orozco et al., 2010), the majority of the participants (i.e., two-thirds) did exude a trajectory that fits with the immigrant paradox - that they initially achieved high grades but these grades dropped over the course of the study. For half of the those who migrate who showed this pattern of academic decline, there was a marked drop in GPA at a specific point in time, while the other half showed a slower, steadier decrease in GPA. In addition to the variety of trajectories described above, it is notable that the study also found a substantial proportion of those who migrate who consistently achieved low GPAs over time (Suarez-Orozco et al., 2010).

Other studies have highlighted similar variation in achievement outcomes whereby young immigrants did generally have positive academic pathways however, the researchers in each case were careful to emphasize that not all academic pathways for those who immigrated were positive (McAndrew et al., 2009; Szalacha et al., 2005).

Indeed, there are many academic paths that foreign-born adolescents may follow and we continue to have much to learn about how the differences in academic outcomes may be explained. As already discussed, research that has looked at group variations in outcomes in young migrants has focused predominantly on ethnic/racial group differences (Leventhal et al., 2006; Portes & Zhou, 1993). Although these factors are important, there is still a lot variation left to be explained (Leventhal et al., 2006). For instance, few studies have taken into account the circumstances under which adolescents have migrated (e.g., as refugees or as economic or family class immigrants) and as some have pointed out, there are many group differences that may be masked by treating migration as a one-dimensional experience (Schwartz, Unger, Zamboanga, & Szapocnik, 2010; Suarez-Orozco & Carhill, 2008).

### **2.1.2 Mental Health Service Utilization**

Understanding the mental health status of foreign-born adolescents is arguably more complex and challenging than the academic domain. This is argued to be due to the fact that the metric is naturally more varied – whereas researchers can use grades as a relatively consistent way of measuring academic outcomes, there isn't a parallel for measuring mental health. There are studies that have found support for the immigrant paradox in the mental health domain - whereby adolescent immigrants were found to have fewer psychosomatic problems and psychological distress (Harris, 1999), as well as lower rates of depression (Ali, 2002). Within the Canadian context, in a study by Beiser and colleagues (2002), young people who migrate were

reported to have fewer emotional and behavioral problems than their non-immigrant counterparts (Georgiades et al., 2007 had similar findings in the Canadian context). In contrast to these studies is other work that has found no difference or even lower levels of psychological well-being for young people who have migrated (Chiu, Feldman, & Rosenthal, 1992; Kao, 1999). For example, the Kao (1999) study made use of longitudinal data in the US to find lower self-efficacy and greater feelings of alienation, but no differences in self-esteem for those who migrate. Clearly, we have more to learn that will help to explain the variations in mental health findings.

One of the ways by which we may gain a greater understanding of mental health is to look beyond direct measures of mental health to developing our understanding of the larger mental health context – namely, how those who migrate utilize the mental health system. Indeed, a recent review of the mental health of immigrant and refugee youth in Canada concluded that more research is needed to explain the variability in mental health outcomes of both immigrant and refugee youth, highlighting the need to gain a more holistic picture of mental health, including more research that explores mental health service utilization for this group (Guruge & Butt, 2015). Indeed, Canada is in an optimal position for capturing health service utilization at the population-level, given our universal healthcare system. In BC, practitioners largely bill for their services through BC’s universal health insurance program, the BC Medical Services Plan (MSP). Practitioner payments for services are captured in the BC MSP database, providing a comprehensive source of all MSP-reimbursed mental health service utilizations provided to BC residents (see “Medical Services Plan (MSP) Payment Information File, 2015).

Based on the summary here, it is clear that migration is not a uni-dimensional experience that can be characterized in and of itself as detrimental or positive in the healthy development and adaptation of foreign-born adolescents and that we still have much to learn about the factors

that explain variations in outcomes. The current study, using population-level data, addressed this gap by providing a more nuanced picture of the different academic and MSP-reimbursed mental health service utilization trajectories that those who migrate to BC experience and by identifying the factors that predict these variations. Of particular interest to the current study was identifying factors in individual migration experiences that may act as assets or risks in the academic achievement and MSP-reimbursed mental health service utilization trajectories of foreign-born adolescents. For the purposes of this work, a risk was defined as a factor with an increased probability of some negative outcome (Masten, 2001; O'Dougherty-Wright & Masten, 2005). In contrast, an asset was defined as a factor associated with better outcomes (Masten, 2001). The terms *risk* and *asset* were used within a resilience framework such that migration was theoretically framed as follows: As discussed in Chapter 1, migration was not considered as a 'risk' in the present study. Rather, it was positioned as proximally associated with a number of factors related to the migration experience that may function as risks or assets. The current study investigated the following factors which are thought to be proximal to the migration experience: Sex, age, age of arrival in Canada, English language learner status, socioeconomic status, migration class (economic class, family class, refugee class) and country of birth.

### **2.1.3 Proximal Migration Factors**

Below is an overview of each of the proximal migration factors that will be explored in this study. For each factor, the literature pertinent to academic achievement and mental health is reviewed.

**Sex.** Regarding academic outcomes, girls tend to do better academically than boys – this has been found in multiple studies specific to young people who migrate (Kao & Tienda, 1995; Suarez-Orozco et al., 2010; Suarez-Orozco & Qin-Hilliard, 2004), as well as more generally for

all adolescents (Arnot, David, & Weiner, 2000). For those who migrate, girls are more likely to report higher academic self-expectations (Portes & Rumbaut, 2001) and higher school engagement (Suarez-Orozco et al., 2010) both of which may contribute to the sex differences in academic achievement.

Regarding mental health differences, there tend to be sex differences as well. Generally-speaking, there are well-established differences in mental health patterns of boys and girls. During adolescence, the incidence rate of depression in girls is twice that of boys (Thapar, Collishaw, Pine & Thapar, 2012). Similarly, adolescent girls tend to have higher rates of anxiety disorders whereas boys tend to have a higher prevalence of behavior disorders (such as conduct disorder; Merikangas, Nakamura & Kessler, 2009). There is also evidence for this internalizing/externalizing discrepancy with young people who migrate (e.g., Harris, 1999; Kao, 1999). The current study will take into account sex differences in academic achievement and MSP-reimbursed mental health service utilization for foreign-born adolescents with the expected finding that girls will have higher levels of achievement as well as a greater need for mental health service services than boys.

**Age.** We know that adolescence is characterized by significant changes as young people at this stage are developing their self-awareness and identities (Erikson, 1968) and at the same time beginning to place a central importance on peer social connections and relationships with a greater emphasis on friendship intimacy (Rubin, Bukowski, & Parker, 2006). For adolescents who are new to a country, these developmental changes may be compounded by the stress of rebuilding social ties in a new country at a time when they are so critical (Katsiaficas, Suarez-Orozco, Sirin, & Gupta, 2013; Suarez-Orozco, Suarez-Orozco & Todorova, 2008) as well as the added tasks of identity development associated with being a minority, such as ethnic identity

development and discrimination (Greene, Way, and Pahl, 2006; Wong, Eccles, and Sameroff, 2003).

Regarding academic achievement, adolescents who are older or younger for their grade level are expected to be at an academic disadvantage. Theoretically, it is well-established that there are consequences for adolescents who find themselves in learning environments that do not match their particular developmental needs (Eccles et al., 1993). Indeed, McAndrew and colleagues (2009) found that entering high school one or more years later was negatively predictive of academic achievement. This finding was also found in the U.S. context, in which over-aged foreign-born adolescents were at increased risk of belonging to the low achievement trajectories (Suarez-Orozco et al., 2010). We might also expect that foreign-born adolescents who are older or younger than average may not find themselves in a school environment that meets their needs and as such, this particular subset of the study population will be at more of a disadvantage. Age was taken into account in the present study in order to understand the role of age in the academic achievement and MSP-reimbursed mental health service utilization trajectories of foreign-born adolescents – indeed, we expected to find that students who were older or younger than average may not have their needs met in the school context and as such, may have less optimal academic achievement and a greater need for mental health services.

**Age of arrival.** Age of arrival is seen as an important factor for predicting developmental trajectories for those who migrate. However, the findings continue to be mixed with respect to the role it plays in the positive adaptation of young people who migrate. Consistent with the notion of the immigrant paradox, there is evidence that students who immigrate at a later age perform just as well (or better) than those who arrived earlier (Fuligni, 1998; Rumbaut, 1997). It has been argued that this pattern is a reflection that those who migrate, having arrived earlier in



life, are already showing signs of decline consistent with the immigrant paradox (Portes & Rumbaut, 2001). However, later studies have found evidence for an opposing pattern in which a younger age of arrival is associated with better achievement outcomes (Clotfelter, Ladd, & Vigdor, 2012). Indeed, researchers are highlighting the need to further unpack the role of age of arrival with more research that focuses on within-person changes over time (Fuligni, 2001b, Marks et al., 2014).

In the case of mental health outcomes, there are few studies that have taken into account age of arrival in the mental health outcomes of those who migrate. In exception to this, Beiser and colleagues (2014) found age of arrival to have limited utility in predicting emotional problems in a child and pre-adolescent Canadian immigrant sample. With an adolescent sample, age of arrival may prove to have greater implications for mental health outcomes given that, as was discussed previously, there are particular vulnerabilities associated with transitioning to a new country during adolescence. The current study, utilizing a population-based cohort endeavored to establish more clarity in the role of age of arrival for both academic achievement and MSP-reimbursed mental health service utilization outcomes.

**English language proficiency.** English language skills are key to academic success (Munoz-Sandoval, Cummins, Alvarado, & Ruef, 1998; Suarez-Orozco et al., 2009). English proficiency predicts GPA consistently across time (Suarez-Orozco et al., 2009). Although achieving oral proficiency is attainable within a few years, it takes significantly more time to develop the academic-style and nuanced language competencies needed for young people who migrate to compete with their native born peers (Suarez-Orozco et al., 2010). Leventhal and colleagues (2006) found that immigrant children showed more growth in verbal ability over time, despite the fact that non-immigrant children had higher initial verbal ability. Nevertheless, it is

important to note that while more time spent in a country does lead to more English proficiency, it does not necessarily lead to higher grades. For example, Portes and Rumbaut (2001) were able to show that although acculturation was associated with enhanced English proficiency, immigrant adolescents put less effort into their work over time, which resulted in lower grades.

Related to this is the psychological stress associated with adapting to a new culture and learning a new language (Hernandez, 2009). Those who have difficulty with the language of the majority are likely to have a difficult time forming friendships and social networks. For example, there is evidence to indicate that those who migrate often suffer from a fear of embarrassment and/or harassment if they have not yet mastered the dominant language (Tsai, 2006). English language proficiency is likely associated with both academic achievement and mental health service use and as such, it was an important dimension to capture in the present study.

**Socioeconomic status (SES).** In general, SES is associated with a whole host of developmental outcomes, but in the case of those who migrate, it does not always emerge as a very robust predictor (Beiser et al., 2002). This is perhaps a result of the ways in which we tend to measure SES. Although immigrant parents may have incomes that fall into the category of poverty, they often have levels of education that do not match (Fuligni, 1998) and parental education tends to play a stronger role than other SES-related factors, such as poverty (Hernandez, 2004). Crosnoe & Lopez Turley (2011) add to this explanation by suggesting that a neighbourhood characterized by low SES may be accompanied with unmeasured neighbourhood advantages (e.g., strong ethnic communities). Furthermore, poverty and being poor might not hold the same valence for immigrants and nonimmigrants. Finally, a study in Canada found that, although those who migrate are twice as likely to be poor, after 10 to 12 years in the country, they reported higher than average incomes in comparison to the total population (Beiser et al.,

2002). With the complexity of SES in the lives of those who migrate, it was an additional factor accounted for in the present research with the expectation that the large-scale nature of the study would help to bring further clarity to our understanding of the role of SES in the academic achievement and MSP-reimbursed mental health service utilization for foreign-born adolescents in BC.

**Migration class.** Migration class is a factor that is generally overlooked in migration research. This distinction is valuable because although all those who migrate can be considered new to a country and consequently undergoing a transition, different forms of migration are likely to have a very different set of experiences (Ogbu & Matute-Bianchi, 1986; Suarez-Orozco & Carhill, 2008), which may manifest in different characteristics, needs, and risks, and therefore very different outcomes. Unfortunately, the field of psychology rarely distinguishes between types of those who migrate and as a result, we have little understanding of the unique mechanisms by which they may adapt (Suarez-Orozco & Carhill, 2008). Under Canada's immigration policy, there are three major categories: Economic class, family class, and refugee class, all three of which were taken into account in the present study and are described below.

**Economic class.** Individuals who immigrate under the economic class are those who have applied to settle in Canada and their selection was based upon a distinct set of criteria intended to optimize their probability of success in the Canadian labour market (Citizenship & Immigration Canada, 2014a). Based on this, we might expect that those who migrate to Canada who are accepted to immigrate via the economic category would be migrating under the most optimal conditions and therefore have the greatest likelihood of thriving post-migration. Indeed, certain sending contexts are thought to provide pre-migration advantages or disadvantages (e.g., Rumbaut, 1995). Within the academic achievement and health literature, selectivity was often

raised as a potential explanation for the initial success of those who migrate (Crosnoe & Lopez Turley, 2011; McDonald & Kennedy, 2004). Although it is important to note that the economic class is a large group and significant diversity is within this group, those who immigrate to Canada under the economic class are likely to be self-selective (e.g., motivated and healthy) and have also been selected by the Canadian government based on Canadian labour market. Because of this, for the current study, we hypothesized that young people who immigrate in Canada via the economic class process would be particularly poised for overall positive adaptation, including high academic achievement and lower MSP-reimbursed mental health service utilization.

***Family Class.*** Immigrants who arrive in Canada under the family class category are joining family members that are already citizens and established in Canada. Those who migrate who are family class immigrants are not assessed against Canadian labour market criteria (Citizenship & Immigration Canada, 2015). For this reason, we might expect that foreign-born adolescents who arrive under the family class immigration program may be arriving into Canadian households with fewer economic resources. In addition to this, family class migrants are, by definition, reuniting with family in Canada with whom which they were previously separated; one of the cited challenges of those who immigrate through the family class program is that the process can be lengthy and therefore, reunification may have come after long delays (Social Planning Council of Ottawa, 2010). For this reason, we might expect that adolescents who arrive under the family class have potentially experienced prolonged periods of separation from their families. In the U.S. context, there is some evidence to indicate that maternal and/or paternal separation during the immigration process negatively impacts post-migration achievement outcomes (Suarez-Orozco et al., 2010). Given the additional challenges that may be

experienced by adolescents who immigrate through the family class program, we expected to find lower levels of academic achievement and higher mental health service utilization, in comparison to their economic class counterparts.

***Refugee class.*** The refugee class is comprised of individuals who have fled their home country because of a fear of persecution and who are deemed to require protection (Citizenship & Immigration Canada, 2014a). Refugees often leave their home countries for the sake of survival – often to flee extreme persecution and war acts (Thomas, Thomas, Nafees, & Bhugra, 2004) and, in many cases, those who are arriving under the refugee class have had little time to prepare for the transition (Citizenship & Immigration Canada, 2014a). As such, for young people who come to Canada as refugees, their experiences both pre-migration and post-migration are typically vastly different from other newcomers. For example, refugees have often experienced unimaginable violence, threats to their existence, and the loss of multiple family members (Stewart, 2011). Many refugees are children and youth who have been left disabled, homeless, and orphaned (Summerfield, 1999). As a consequence, young refugees are often unaccompanied in Canada (Hodes, Jagdef, Chandra, & Cunnif, 2008). Upon arrival in Canada, these youth are expected to set up a home, get themselves to school, and oftentimes hold a full-time job. This would be challenging for any adolescent in Canada, but this is in addition to being in a new country, where they are often struggling with language and cultural barriers (Stewart, 2011).

Because of their pre- and post-migration experiences, emotional and psychological issues are much more pronounced for young refugees, and these can impede their school achievement (Beiser, 1999; Rousseau, Drapeau, & Corin, 1996). School struggles are also often linked to the fact that refugees have never attended school before arriving in Canada. Attending school requires a whole host of skills that most adolescents have been acquiring since they were young

children, often even before attending school (Stewart, 2011). Because of the difficulties they face, there is a propensity in Canada to place students who are refugees in non-university bound tracks, while the majority of Canadian-born children are placed on education tracks that provide them with the credits that will enable them to go to university, if they so choose (Kaprielian-Churchill, 1996; Wilkinson, 2002; Yau, 1995).

With respect to academic achievement, we might expect that this multitude of challenges would lead to academic trajectories overwhelmingly marked by low achievement. Unfortunately, there is very little research in the Canadian context with a focus on the academic achievement outcomes of adolescents who are refugees. However, Stewart (2011) reported that young refugees are over-represented among high school drop-outs in Canada. Yet, in contrast to this, Wilkinson (2002) found that the majority of refugee youth in her study (91 participants) were doing well academically, with 50 percent expecting to continue on to post-secondary education after high school, 30 percent finding it difficult to finish high school, and another 20 percent not expecting to complete high school. Clearly it is important to explore the factors that predict these varied academic pathways.

Although young refugees may lack adequate skills and support to thrive at school, this should not be construed as a lack of motivation to succeed in school. Despite the challenges faced by adolescents who arrive as refugees, it is clear that young refugees see getting an education as the avenue for success in Canada (Stewart, 2011). In fact, a study conducted in the U.S. found that higher proportions of Cambodian refugees were considered to be excelling academically despite the challenges they faced, even in comparison with other immigrant groups (Szalacha et al., 2005). These initial findings are important as they provide evidence that while some refugees struggle academically, others may do well. In Canada and beyond, these findings

need to be replicated with larger sample sizes in order to gain a greater understanding of the different academic paths that foreign-born adolescents who arrive as refugees may take.

The challenges to mental health that are experienced by adolescents who arrive as refugees are many: In addition to post-migration challenges, those who arrive as refugees are more likely to have faced pre-migration trauma. Pre-migration experiences such as surviving war and other types of violence can have devastating social and psychological consequences for young people (Summerfield, 1999; Wilkinson, 2002). Their pre-migration trauma leads to a high risk and incidence of psychopathology, particularly post-traumatic stress disorder (Fazel, Wheeler, & Danesh, 2005; McKelvey & Webb, 1995). Most troubling is that young adolescents who are refugees often report keeping these mental health challenges to themselves (Stewart, 2011). Ongoing stressors post-migration put adolescents who are refugees at increased risk for depression in the host country (Heptinstall, Sethna, & Taylor, 2004; Sack, Clarke, & Seeley, 1996).

In all, although there have been a few studies that have provided rich insight there continues to be a paucity of research focused on the mental health experiences of adolescent refugees, particularly in Canada (a total of 17 studies over the past 23 years, according to a recent review; see Guruge & Butt, 2015). There is a particular lack of large-scale studies that are able to account for within-group variation over time that can both describe and predict the mental health outcomes of adolescent refugees in Canada. Based on the evidence accumulated thus far, we expected that refugees would have a considerably greater need for mental health services and lower levels of achievement than their economic class and family class counterparts.

**Birth country.** There are a number of studies that have unearthed important differences in adjustment for those who migrate based upon ethnic differences (e.g., Leventhal et al., 2006;

McAndrew, 2009; Portes & Rumbaut, 2001; Suarez-Orozco et al., 2010; Suarez-Orozco et al., 2009). Particularly well-documented are the high levels of academic achievement often found in young people of Chinese descent (for a review, see Costigan, Hua, & Su, 2010). This pattern of high achievement has been documented in Canada (e.g., McAndrew et al., 2009) and widely in the U.S. (e.g., Suarez-Orozco et al., 2009; Portes & Rumbaut, 2001; Xu, Connelly, He, & Phillion, 2007). Despite the success of foreign-born youth of Chinese descent, there is growing concern for the social and emotional health of this high achieving group (Qin, 2008; Way & Chen, 2000) with studies documenting significant amounts of cultural pressure that can lead to increased emotional stress (Li, 2009; Zhou, Peverly, Xin, Huang, & Wang, 2003). In the U.S. at least, there is evidence that young people of Asian descent have the highest incidence of suicidality (Lipsicas & Makinen, 2010).

In contrast with studies focused on young people from China, there are relatively few directed at understanding the experiences of other ethnic groups. The Philippines, China and India make up the top three immigration source countries in Canada (Citizenship & Immigration Canada, 2014a) however very little research has focused on the specific adaptation outcomes for adolescents from the Philippines or India. Given the previous work, birth country was a key consideration in the present study with the specific intention of helping to elucidate academic and MSP-reimbursed mental health service utilization differences in the three top source countries in Canada: Philippines, China, and India.

#### **2.1.4 Population-based Approach**

The current study was able to capture virtually the entire population of foreign-born adolescents in the BC provincial school system that were enrolled in Grade 10 in the 2010/11 and 2011/12 school years. Population-based cohort studies are built on the notion of having a



representative sample and this characteristic offers a number of inherent advantages. A representative sample provides the best opportunity for observing prevalence rates and distributions across a population because bias is minimized (Szklo, 1998). Having a representative sample is also ideal for measuring predictors or particular risks in an unbiased way. The greatest advantage to a population-based design is that it provides greater assurance that the conclusions drawn are more generalizable (i.e., evidence of external validity; Szklo, 1998). This study design brings strength to the present work although note that population-based studies are not free from bias, including the present one. Specific biases will be addressed in the forthcoming sections.

### **2.1.5 Summary of Objectives and Research Questions**

To reiterate, the present study aimed to characterize the academic achievement and MSP-reimbursed mental health service utilization trajectories of foreign-born adolescents to BC and to identify assets and risks that contributed to the resulting trajectories. As a second objective, the study aimed to examine the relationship between the identified academic achievement and MSP-reimbursed mental health service utilization trajectories for foreign-born adolescents in BC over the course of their high school years. The following research questions guided this work:

- 1) How can the academic achievement and MSP-reimbursed mental health service utilization trajectories of foreign-born adolescents in BC be characterized, over the course of high school?
- 2) How do sex, age, age of arrival, English language ability, socioeconomic status, migration class, and birth country impact the academic achievement and MSP-reimbursed mental health service utilization trajectories of foreign-born adolescents in BC, over the course of high school?

- 3) What is the relationship between the academic achievement trajectories and MSP-reimbursed mental health service utilization trajectories for foreign-born adolescents in BC, over the course of high school?

## **2.2 Methods**

### **2.2.1 Procedures**

The current study utilized a retrospective population-based cohort design. In order to achieve the study objectives, administrative data were requested and linked across three sources:

1) school-records information from The BC Ministry of Education (MED) via Edudata; 2) immigration-related records from Citizenship and Immigration Canada (CIC) via Population Data BC (PopData); and 3) MSP-reimbursed mental health service utilization and basic demographic information were requested from the BC Ministry of Health (MOH) via PopData. Overall, the data access request process was facilitated by PopData and Edudata, which act as trusted third-parties on behalf of the data stewards to facilitate and support research projects. They prepare and securely deliver the data to researchers in accordance with the specification of the approved research projects. Edudata acts as a service provider on behalf of the MED. PopData acts as a service provider on behalf of several data stewards (including the MOH and CIC), and as such, holds a wide range of individual-level, linked data on the resident population of BC.

In order to obtain approval to gain access to the MED, MOH and CIC data, an application package was submitted to each data steward via PopData. This application package included a PopData Data Access Request (DAR) application, as well as additional supporting documentation, such as field-level data checklists and UBC Behavioral Research Ethics Board (BREB) approval. Each data steward reviewed the application in order to ensure the study had

public interest value, scientific merit, was feasible, and that it upheld privacy and security concerns. Obtaining approval from all data stewards (MED, MOH and CIC) took 8 months in total. Once approvals from all data stewards were obtained, the research team (myself and my research supervisor, Dr. Jennifer Shapka) entered into a Research Agreement with each respective data steward, as well as a Researcher Services Agreement with PopData. The full sign-off on all required agreements triggered the data preparation, which included the development of the study population and the extraction of the requested data for each member of the study population.

**Privacy.** In keeping with all study research agreements, the process of accessing, analyzing, and storing administrative data followed a strict process to ensure the privacy and security of the potentially identifiable information of the BC residents for which data were requested. The current study followed a number of procedures that ensured the highest level of security and privacy: (1) The data linkage was completed by PopData as a trusted third-party, which ensured that the study research team, at no time, had access to individual identifiers (i.e., Personal Education Number or Personal Health Numbers); (2) The data were analyzed and stored on Population Data BC's Secure Research Environment (SRE) which is a secure central server that can only be accessed via an encrypted Virtual Private Network (VPN) through a firewall that is designed in accordance with the strictest government standards for holding highly sensitive administrative data; (3) Only authorized individuals had access to the study data and access was only granted after completing an online privacy training course and signing a pledge of confidentiality.

**Data linkage.** In order to carry out the study objectives, data linkage work was completed to link individual-level information from one source (i.e., MED) to the individual-

level information from other sources (i.e., CIC and MOH). All data linkage in the current study was undertaken by PopData. Data linkage is conducted by utilizing personally identifying information from each source (e.g., full names, date of birth, personal health number) in order to connect individuals across sources. Specifically for this project, a linkage strategy document that outlined the technical details of the process was created (see Appendix A for the detailed linkage strategy approved and undertaken by PopData). PopData utilizes a hybrid linkage approach: Much of the linkage is deterministic (i.e., a one-to-one match), however, some probabilistic linkage is also conducted as a way to account for administrative data flaws and inconsistencies (e.g., “Benedict” and “Ben” is a first name discrepancy that should not cause a link to be rejected; see “The data linkage process”, 2014). A hybrid deterministic-probabilistic linkage approach is designed to achieve an optimal balance in which accurate links are maximized and incorrect links are minimized. This approach, however, does come with the small risk of including incorrect links (i.e., an individual from one data source is incorrectly identified as the same individual in another data source). As such, as an additional measure, the linkage work done by PopData was validated by the research team by comparing the date of birth and gender fields provided by PopData (sourced from the MOH data) with the date of birth and gender provided from the MED. For this sample, 99.9% of records were a match across the two data sources. As a precaution, the resulting 22 individuals with discrepant birthdays documented across the sources were removed from the study population.

**Study population development.** Two cohorts were identified in order to complete the study objectives. The primary study cohort (the foreign-born cohort) was defined as all foreign-born adolescents who were enrolled in Grade 10 in the 2010/11 or 2011/12 school years in BC. A comparison group (the Canadian-born cohort) was defined as a random sample of Canadian-

born adolescents enrolled in Grade 10 in the 2010/11 or 2011/12 school years in BC. As a first step in defining the foreign-born and the Canadian-born cohorts, the MED (via Edudata) provided PopData with a study population file consisting of all BC students who were in their Grade 10 year in the 2010/11 and 2011/12 school years. PopData utilized the study population file, in conjunction with the CIC Permanent Residents file, to further refine the study population to identify the foreign-born cohort (i.e., the entire population of foreign-born students from the identified cohort) and a random sample of Canadian-born students, drawn from the full study population. The foreign-born cohort was created by identifying all students (from the initial MED list of BC students) who had a record in the CIC Permanent Residents file at any time. The Canadian-born cohort was subsequently selected randomly from the original MED cohort file based on a 2:1 ratio of Canadian-born vs. foreign-born.

The population of Grade 10 students across both years consisted of a substantial number of students who were not in their adolescent years (i.e., 13-18 years old). Given that the study focuses specifically on adolescence, the study population was further refined to exclude Grade 10 students who were younger than 12 or older than 18. Notably, this exclusion had little impact on the Canadian-born cohort (a loss of 1.2%). However, this exclusion criterion resulted in a loss of 21% of students enrolled in Grade 10 within the foreign-born cohort. Given the developmental nature of the study and the specific focus on adolescence, the exclusion was maintained. It is noted, however, that a future investigation into this sub-population of foreign-born adult learners is warranted. The final foreign-born cohort included 9113 individuals (virtually the entire population of foreign-born adolescents enrolled in BC schools over the course of two years) and the final Canadian-born cohort included 22845 individuals (a random sample selected from the full population of Canadian-born adolescents attending BC schools).

**Data extracts and measures.** For the foreign-born and Canadian-born cohorts, specific data extracts were requested from the MED, the MOH (Consolidation Files and Medical Services Plan) and CIC (Permanent Residents File) in order to complete the study objectives. Below is a detailed description of the data that was extracted from each source, as well as the measures that were created for the current study.

***Consolidation Files (Ministry of Health).*** Demographic information was requested from the Consolidation Files, which are derived from the BC Medical Services Plan (MSP) Registration and Premium Billing (R&PB) files. PopData utilizes BC MSP registration snapshots, which are provided quarterly by the Ministry of Health to create a consolidation file for each year that includes demographic information for all BC residents registered with MSP within a given year. BC residents are required to register with MSP and it is therefore considered to be the most complete source of demographic information available for the population of BC residents.

The Consolidation Files were used in the current study to determine age, sex, and neighborhood income deciles for the study population. Neighborhood income deciles are utilized in the current study as a proxy for socioeconomic status. They are measures of income (adjusted for household sizes) which are allocated based on an individuals' documented Postal Code in their Grade 10 year. The income deciles are derived by Population Data BC based on Census data using Statistics Canada's Postal Code Conversion File (PCCF+; Statistics Canada, 2011). Table 2.1 summarizes age, sex, and neighborhood income deciles for the foreign-born and Canadian-born cohorts. As Table 2.1 indicates, the foreign-born cohort is comprised of more males who are slightly younger, and tend to live in neighborhoods characterized by lower income deciles.

Table 2.1 *Basic Demographic Summaries for the Foreign-born and Canadian-born Study Cohorts*

|                             | Foreign-born<br>(n=9113) | Canadian-born<br>(n=22845) |           |           |                |
|-----------------------------|--------------------------|----------------------------|-----------|-----------|----------------|
|                             | <i>M (SD)</i>            | <i>M (SD)</i>              | <i>t</i>  | <i>df</i> | 95% CI         |
| Age <sup>a</sup>            | 15.38 (.57)              | 15.38 (.54)                | -0.12     | 16021     | [-.014, .013]  |
| Sex (% female)              | 46.8                     | 48.6                       | -2.76**   | 16790     | [-.029, -.005] |
| Income Deciles <sup>b</sup> | 5.04 (2.94)              | 5.75 (2.83)                | -19.38*** | 15348     | [-.785, -.641] |

Note.

<sup>a</sup> Age calculated based on year and month of birth (day was set to '15' in all cases) and represents age at Grade 10 year.

<sup>b</sup> Neighborhood income deciles are measures of incomes (adjusted for household sizes ) which are allocated based on individuals' documented Postal Code in their Grade 10 year and are calculated based on Census data using Statistics Canada's Postal Code Conversion File (PCCF+; 1 = lowest income quintile, 10=highest income quintile).

\*\* $p < .01$ . \*\*\* $p = .000$ .

***Citizenship and Immigration Canada Permanent Residents File.*** Immigration-related records were requested from Citizenship and Immigration Canada's Permanent Residents File for each member of the foreign-born cohort in order to help characterize their migration experiences and to identify any risks or assets associated with certain migration experiences. The data requested included information about their dates of original entry and dates of landing, country of origin, and immigration class. Date of original entry into Canada was used to calculate the average age of arrival for the foreign-born cohort ( $M = 9.26$ ,  $SD = 4.13$ ). On average, individuals in the foreign-born cohort had spent between 5 and 6 years in Canada by their Grade 10 year ( $M = 5.6$ ,  $SD = 4.02$ ). Regarding language proficiency, 36.6% indicated some English language ability upon arrival in Canada (and 1.62% indicated French language ability). Table 2.2 provides a summary of the countries of birth as well as the migration classes for the foreign-born population. As can be seen, the foreign-born cohort came from a wide range of countries, and the largest proportion of participants arrived under the economic class migration category. Note that the proportions represented in Table 2.2 broadly reflect the provincial and national Canadian numbers reported (Statistics Canada, 2012).

Table 2.2 *A Summary of Basic Migration-related Descriptive Statistics for the Foreign-born Cohort*

|                                  | Foreign-born cohort ( <i>n</i> = 9113) | % of Foreign-born cohort |
|----------------------------------|--|--------------------------|
| Immigration Class <sup>a</sup>   |  |                          |
| Economic                         | 7015                                   | 77.00                    |
| Family                           | 1237                                   | 13.57                    |
| Refugee                          | 857                                    | 9.40                     |
| Other                            | <5                                     | 0.04                     |
| Source Countries <sup>b</sup>    |  |                          |
| Philippines                      | 1714                                   | 18.80                    |
| People's Republic of China       | 1127                                   | 12.40                    |
| India                            | 715                                    | 7.85                     |
| Korea                            | 555                                    | 6.10                     |
| United States of America         | 507                                    | 5.56                     |
| United Kingdom                   | 462                                    | 5.07                     |
| Taiwan                           | 356                                    | 3.91                     |
| Iran                             | 343                                    | 3.76                     |
| Hong Kong                        | 278                                    | 3.05                     |
| Germany                          | 209                                    | 2.29                     |
| Pakistan                         | 206                                    | 2.26                     |
| South Africa                     | 191                                    | 2.10                     |
| Mexico                           | 136                                    | 1.49                     |
| Iraq                             | 111                                    | 1.22                     |
| Columbia                         | 108                                    | 1.19                     |
| Romania                          | 105                                    | 1.15                     |
| Russia                           | 86                                     | 0.94                     |
| Singapore                        | 84                                     | 0.92                     |
| United Arab Emirates             | 84                                     | 0.92                     |
| Afghanistan                      | 81                                     | 0.89                     |
| Other (all countries not listed) | 1655                                   | 18.13                    |

Note:

<sup>a</sup> Immigration Class categories were based on Citizenship & Immigration Canada categorization.

<sup>b</sup> Only top 20 birth countries listed.

**Ministry of Education.** For each member of the foreign-born and Canadian-born cohorts, Grade 10, 11, and 12 course records (over the 2010/11-2013/14 school years) were requested from the Ministry of Education. The data request included basic demographic information (such as birth date), as well as course information and grades. Requesting all courses for each student would have resulted in over a million records and an unmanageable amount of data to analyze and as such, the focus was narrowed to the academic courses that fulfilled the BC provincial graduation requirements for language arts (e.g., English or Communications), social studies (e.g.,



Social Studies or BC First Nations Studies), mathematics (e.g., Mathematics or Calculus), and science (e.g., Science & Technology or Chemistry). Mathematics, science, language arts, and social studies course mark variables were derived for each individual. In cases where provincial examinations were applicable to the course, the final course mark included the provincial examination score. For students who took multiple courses that satisfied their course requirement within a given grade (e.g., an individual who took Mathematics 12 and Calculus 12) or who took the same course multiple times, only their highest final course grade was included. Table 2.3 below provides a summary of the differences in the foreign-born and Canadian-born cohorts across final course grades. The independent samples t-test results demonstrate that, as a group, the foreign-born cohort achieved higher course marks across all courses measured. Also note that, with the exception of Social Studies 12, a larger proportion of the foreign-born cohort were enrolled in each of the courses.

Table 2.3 *Means and Standard Deviations for Course Grade Percentages Achieved in Math, Science, Social Studies and Language Arts for the Foreign-born and Canadian-born cohorts*

|       | Foreign-born |           |                               | Canadian-born |           |                               | <i>t</i> | <i>df</i> <sup>b</sup> | 95% CI      |
|-------|--------------|-----------|-------------------------------|---------------|-----------|-------------------------------|----------|------------------------|-------------|
|       | <i>M</i>     | <i>SD</i> | % N <sub>1</sub> <sup>a</sup> | <i>M</i>      | <i>SD</i> | % N <sub>2</sub> <sup>a</sup> |          |                        |             |
| MA 10 | 74.76        | 15.01     | 91.4                          | 70.27         | 14.04     | 90.3                          | 22.98*** | 14523                  | [.19,4.02]  |
| MA 11 | 75.92        | 15.20     | 91.4                          | 71.97         | 14.63     | 87.5                          | 20.13*** | 15070                  | [.20,3.56]  |
| MA 12 | 79.14        | 16.50     | 63.2                          | 76.63         | 14.96     | 43.3                          | 9.48***  | 11109                  | [.26,1.99]  |
| SC 10 | 75.36        | 14.01     | 93.4                          | 71.63         | 13.64     | 90.7                          | 20.84*** | 15458                  | [.18,3.38]  |
| SC 11 | 77.68        | 14.77     | 91.4                          | 74.49         | 14.61     | 86.2                          | 16.62*** | 15527                  | [.19,2.80]  |
| SC 12 | 78.67        | 16.16     | 64.9                          | 75.87         | 15.73     | 49.3                          | 10.88*** | 11739                  | [.26,2.30]  |
| SS 10 | 76.30        | 14.02     | 93.1                          | 73.49         | 14.13     | 91.1                          | 15.55*** | 15846                  | [.18,2.46]  |
| SS 11 | 76.55        | 13.64     | 90.2                          | 73.87         | 13.74     | 83.6                          | 14.89*** | 15686                  | [.18,2.33]  |
| SS 12 | 72.19        | 13.29     | 2.0                           | 68.08         | 15.28     | 5.3                           | 3.84***  | 267                    | [1.07,2.01] |
| LA 10 | 74.56        | 12.71     | 94.4                          | 72.75         | 13.05     | 92.3                          | 11.05*** | 16359                  | [.16,1.49]  |
| LA 11 | 75.80        | 12.89     | 91.3                          | 73.80         | 13.48     | 88.0                          | 11.75*** | 16182                  | [.17,1.67]  |
| LA 12 | 74.76        | 12.19     | 88.6                          | 73.06         | 12.01     | 85.3                          | 10.56*** | 14866                  | [.16,1.38]  |

Note. Equal variances not assumed for independent samples t-test results. MA = Mathematics, SC = Science, SS = Social Studies, LA = Language Arts

<sup>a</sup> %N<sub>1</sub> and %N<sub>2</sub> indicate the percentage of the foreign-born cohort and 2 respectively that have completed each course (N<sub>1</sub> = 9113, N<sub>2</sub> = 22845).

<sup>b</sup> Degrees of freedoms are reported for the 'equal variances not assumed' option.

\*\*\**p* = .000

A number of variables were created in order to contextualize the course marks. First, a variable was derived to flag individuals who had taken advanced courses in math, science, social studies, and language arts (denoted by one or more Advanced Placement (AP) or International Baccalaureate (IB) course taken in the respective subject area). As can be seen in Table 2.4, a significantly larger proportion of the foreign-born cohort took advanced courses in math, science, social studies and language arts, in comparison to the Canadian-born cohort. A variable was also created to indicate whether an individual had retaken a course (at least one) within a given subject area. Table 2.4 reports the proportions of individuals in the foreign-born and Canadian-born cohorts who had retaken courses. Of note, there were no significant differences in retakes between the foreign-born and Canadian-born cohorts in the grade 10 level courses. However, in all cases at the grade 11 and 12 level, a significantly higher proportion of the foreign-born group had retaken at least one course. In order to further understand the extent to which those retakes were required for graduation (i.e., the initial course mark was a failing mark), an indicator of course failure was also derived. Table 2.4 summarizes the proportion of students in the foreign-born and Canadian-born cohorts who failed at least once in a given subject area. While no differences in failing marks were found across many courses, there was a notably higher proportion of failing grades in the foreign-born cohort group in language arts 10-12, math 12, and science 11-12 course. An indicator of English Language Learner (ELL) status was also derived to quantify the proportion of students who were designated ELL. A student designated as ELL denotes a student who is required to take some of their coursework, at least English, through the ELL program because their English proficiency was assessed to be at a level whereby they require English support prior to being able to meet the learning outcomes set by the province of BC. Less than 20% of the foreign-born cohort were designated ELL at Grade 10

(see Table 2.4 for more details). Finally, a special needs flag was created for each individual which indicated whether they were designated as having special needs at school. This flag was used in the MSP-reimbursed mental health service utilization model in order to take into account students with special needs who are likely to be utilizing mental health services more consistently and in higher proportions than in the general population.

Table 2.4 *Characterizing the Foreign-born and Canadian-born Coursework Based on Proportions of Advanced Coursework, Course Retakes, Course Failures and English Language Learning*

|                | <i>%Foreign-born</i> | <i>%Canadian-born</i> | <i>t-value<sup>a</sup></i> | <i>df<sup>b</sup></i> |
|----------------|----------------------|-----------------------|----------------------------|-----------------------|
| MA Advanced    | 7.0                  | 1.8                   | 18.58***                   | 11098                 |
| SC Advanced    | 5.3                  | 1.3                   | 16.18***                   | 11026                 |
| SS Advanced    | 4.0                  | 1.1                   | 13.66***                   | 11157                 |
| LA Advanced    | 5.4                  | 1.3                   | 16.80***                   | 10911                 |
| MA Retake      | 18.4                 | 14.4                  | 8.45***                    | 15413                 |
| SC Retake      | 13.3                 | 9.5                   | 9.21***                    | 14846                 |
| SS Retake      | 5.8                  | 5.9                   | -0.18                      | 16827                 |
| LA Retake      | 11.6                 | 8.8                   | 7.32***                    | 15095                 |
| MA Fail        | 7.5                  | 6.8                   | 2.37**                     | 16051                 |
| SC Fail        | 5.9                  | 5.2                   | 2.47**                     | 15897                 |
| SS Fail        | 4.3                  | 4.2                   | 0.77                       | 16442                 |
| LA Fail        | 5.2                  | 4.7                   | 1.91                       | 16063                 |
| ELL – Grade 10 | 19.2                 | 1.1                   | 43.56***                   | 9117                  |
| ELL – Grade 11 | 16.6                 | 1.0                   | 39.37***                   | 9498                  |
| ELL – Grade 12 | 10.7                 | 1.2                   | 31.25***                   | 9034                  |
| Special Needs  | 9.8                  | 20.6                  | -26.08***                  | 22540                 |

Note. MA = Mathematics, SC = Science, SS = Social Studies, LA = Language Arts, ELL = English Language Learning

<sup>a</sup> Equal variances not assumed for independent samples t-test results (N<sub>1</sub> = 9113, N<sub>2</sub> = 22845).

<sup>b</sup> Degrees of freedoms are based upon 'equal variances not assumed'.

\*\*\**p* = .000, \*\**p* = .01

***Medical Services Plan file (Ministry of Health).*** Medical Service Plan (MSP) is BC's universal health insurance plan. The MSP files capture all services claimed by a health care practitioner (e.g., physician, psychiatrist, massage therapist) to MSP within a given year. For this reason, the MSP file is thought to be the most comprehensive and complete data source for health care services utilization in BC. Information on mental health service utilization from the MSP file were requested to act as an indicator of mental health status by identifying individual

MSP-reimbursed mental health services for individuals in both the foreign-born and Canadian-born cohorts.

Although this is considered to be the most complete and comprehensive source of mental health service use for BC residents, it is important to highlight that there are a number of exclusions and that the MSP file does not capture all mental health service utilization. First, a small subset of practitioners are salaried and therefore do not bill individual services via MSP. For this reason, any mental health visits to a salaried practitioner will not be captured in the MSP data (see “Medical Services Plan (MSP) Payment Information File, 2015). Also, the file does not include services that are not, at least in part, paid through BC MSP and so mental health services that are delivered through some community-based programs or privately paid mental health services would not be captured in this file. A few studies have attempted to quantify the proportion of mental health services that are not captured by MSP by comparing self-reported rates of mental health services to those found through provincial administrative databases, such as MSP. In the BC context, one study documented that about half of the study participants reported more mental health visits, in comparison to their administrative data records, while a quarter under-reported their visits, and another quarter reported the same number of visits (Palin, Goldner, Koehoorn, & Hertzman, 2001). A study conducted in Ontario found that the self-reported survey captured 28% more mental health visits than those recorded in the Ontario Health Insurance Program administrative data source (Rhodes, Lin, & Mustard, 2002). In the present study, it will be important to take this context into account and emphasize that the current study is capturing MSP-reimbursed mental health service utilization only.

MSP-reimbursed mental health service utilization were captured by identifying one or more of the following events recorded on a particular day (determined based on the documented

date of service) in the MSP file: 1) practitioner billing codes for mental health services, 2) documented diagnosis codes related to mental health, 3) service codes related mental health services (similar methodology has been previously used; for an example see Palin, Goldner, Koehoorn, & Hertzman, 2011). Refer to Table 2.5 for the specific fields and associated values that were used to determine instances of MSP-reimbursed mental health service utilization. As can be seen in Table 2.6, individuals in the Canadian-born cohort had more MSP-reimbursed mental health service utilization across Grades 10, 11, and 12 on average, than their foreign-born counterparts. Note that although diagnostic codes present in the data would indeed allow for further filtering based on the specific diagnosis documented (e.g., services related to a depression diagnostic code), the current study refrains from characterizing services at this level for a few reasons. First, diagnostic codes utilized for MSP billing are not intended to identify a diagnosis. Second, there are known accuracy issues with the diagnostic codes (see “Medical Services Plan (MSP) Payment Information File, 2015) and as such, any analysis refined down to the diagnosis code level would be limited without additional data that can provide further validation.

*Table 2.5 Fields and Code Values Used to Define MSP-reimbursed Mental Health Service Utilization in the BC Ministry of Health’s Medical Services Plan File*

| Field                  | Codes  | Description  |
|------------------------|--|--|
| ICD-9 Diagnostic Codes | 290.xx-319.xx; 04A <sup>a</sup> , 50B <sup>a</sup> | Indicates the condition for which an individual is treated. Codes associated with mental and behavioral disorders were included.   |
| Fee Item               | 00605-00681; 60607-60645                           | Identifies each service provided by a practitioner, based on billing claims. Codes included for claims associated with mental health services such as diagnostic interviews and treatment recommendations. |
| Claim Specialty Code   | 03, 83   | Indicates practitioner’s specialty associated with the particular claim. Codes associated with psychiatry and counselor/psychologist specialties were included.  |
| Service Code           | 24   | Indicates the type of service rendered by a practitioner. The code associated with counseling psychotherapy was included.  |

Note. ICD-9 = International Classification of Disease, Version 9.

<sup>a</sup>An MSP-only diagnostic code created by the BC Ministry of Health – not a standard ICD-9 code.

Table 2.6 Means and Standard Deviations for BC MSP-reimbursed Mental Health Service Utilization for the Foreign-born and Canadian-born Cohorts

|               | Foreign-born<br>( <i>n</i> =9113)  | Canadian-born<br>( <i>n</i> =22849) |                      |                       |               |
|---------------|------------------------------------|-------------------------------------|----------------------|-----------------------|---------------|
|               | <i>M<sup>a</sup></i> ( <i>SD</i> ) | <i>M</i> ( <i>SD</i> )              | <i>T<sup>b</sup></i> | <i>df<sup>c</sup></i> | 95% CI        |
| Grade 10 MHSU | .22 (2.27)                         | .39 (2.39)                          | -5.82***             | 17567                 | [-.222,-.110] |
| Grade 11 MHSU | .40 (3.71)                         | .66 (3.76)                          | -5.71***             | 16993                 | [-.354,-.173] |
| Grade 12 MHSU | .37 (2.69)                         | .67 (3.71)                          | -8.04***             | 22876                 | [-.374,-.227] |

Note. MHSU = MSP-reimbursed mental health service utilization. Means values are based on individual yearly frequency of mental health service utilization. Equal variances not assumed for independent samples t-test results.

<sup>a</sup> Indicates Mean number of MHSUs over the course of each year.

<sup>b</sup> Equal variances not assumed for independent samples t-test results.

<sup>c</sup> Degrees of freedoms are based upon 'equal variances not assumed'.

\*\*\**p* = .000.

**Statistical analyses.** The study made use of Group-Based Trajectory Modeling (GBTM; Nagin & Odgers, 2005) to achieve the research objectives utilizing SAS Proc Traj software (Jones & Nagin, 2007). For a number of reasons, GBTM was chosen as the most appropriate methodology (over other longitudinal statistical techniques, such as Hierarchical Linear Modeling) for mapping the course of academic achievement and MSP-reimbursed mental health service utilization over students' Grade 10, 11 and 12 years: GBTM is able to capture heterogeneity in trajectories by identifying and subsequently characterizing clusters of individuals or trajectory groups who follow similar paths of academic achievement and MSP-reimbursed mental health service utilization over time. Rather than assigning individuals to groups a priori (e.g., immigrants, refugees, or nonimmigrants), GBTM can test for the presence of group differences and further to this, help to characterize those groups, as well as the probability of certain type of individuals belonging to them (Nagin & Odgers, 2010). This is important for the purposes of the present study because we were not forced to make assumptions about who (i.e., nonimmigrants or students who arrived as refugees) would follow a distinct trajectory – examining the complexity of the adaptation processes is one of the questions of the

study, so it would have been inappropriate to make these assumptions about group differences a priori.

Academic achievement (i.e., average grades) and mental health service utilization acted as the dependent variables, with the respective trajectories (i.e., growth or decay curves) estimated based on three time points. The model predictors sex, age, age of arrival, English language learner status, socioeconomic status, birth country, and migration class (and special needs, in the case of the MSP-reimbursed mental health service utilization model) were entered into the models by way of multinomial logistic regression analysis in order to determine how each factor impacts the probability of belonging to each trajectory group.

***Trajectory model selection.*** Censored normal estimation models were selected for all academic trajectories (i.e., math, science, language arts, and social studies) because they are most appropriate for data that are continuous and (approximately) normally distributed (Nagin, 2005). For the MSP-reimbursed mental health service utilization model, a zero-inflated poisson model was specified, which was determined to be more appropriate for count data where a large proportion of the population had zero counts, as was expected for the MSP-reimbursed mental health service utilization data (Jones, Nagin & Roeder, 2001). The first step in the analyses was to determine the optimal number of trajectories and the shape of each trajectory that best fit the heterogeneity of the data. This was done through an iterative process, as described by Nagin (2005), which involved systematically increasing the number of trajectory groups fit until reaching the best fitting model. Model fits were initially evaluated using Bayesian Information Criteria (BIC) which is the recommended test statistic for determining model fit (Nagin, 1999; 2005). Utilizing the BIC criterion, the number of groups in each model was gradually increased to the point at which the BIC test statistic indicated best model fit (note that smaller or less

negative BIC values indicate better fitting models; Nagin, 1999; 2005). Based on this first set of criteria, final models were fit as follows: Math achievement (6 groups, BIC = -275643.2), science achievement (6 groups, BIC= -276386.0), language arts achievement (5 groups, BIC= -306940.8), social studies achievement (4 groups, BIC= -216168.8) and MSP-reimbursed mental health service utilization (3 groups, BIC = -66174.6). The fit for the groups are provided below, but a fuller description of the trajectories is provided in the next section.

Note that in the case of the social studies achievement model, a 5-group model was identified as a better statistical fit according to the BIC criterion. However, Nagin (2010) cautions against utilizing statistical criteria as the sole guide of model fit and emphasizes the importance of situating the model in the context of the study in order to make a judgment about what will be the most useful and parsimonious way to answer the research objectives. With this in mind, in the case of the social studies achievement model in the present study, the 4-group model was selected over the statistically better fitting 5-group model because the fifth group had a very small membership (less than 1%) and did not add theoretical value over and above the 4-group model.

Missing data were considered in the case of all academic achievement models (i.e., representing students not taking courses) and data were found to be missing in low proportions (under 2%). The foreign-born and Canadian-born cohorts were equally represented in the missing data group and no distinct group difference patterns emerged – with the exception of ELL status. It should be noted that ELL students were over-represented in the foreign-born missing data group. This is to be expected as students who are taking ELL classes are not always eligible for graduation-level courses.



As an additional indicator of appropriate model fit for each model, posterior probabilities were evaluated. For GBTM, membership in each trajectory group is probabilistic. That is to say, each individual is given a probability of belonging to each group rather than being assigned to one particular group. Group membership is not definite and individuals are classified into groups based upon their maximum probability group assignment. For example, individual A may be assigned a probability of .97 of belonging to group 4 and a probability of .01 of belonging to group 1, 2, and 3, respectively. Based on the maximum probability assignment rule, individual A would be classified as belonging to group 4, although there is still a probability, albeit small, of membership in one of the other groups. Given this, an important test of model fit is the determination that group membership probability scores for all individuals are distinctive enough to have reasonable certainty that they have been assigned to the appropriate group. Therefore, it is ideal if the probability of membership is high (approaching 1) in one group and low (approaching 0) in all of the others. Tables 2.7-2.11 summarize the average posterior probabilities of group membership for all of the models fit in the current study. As can be seen, in all cases the average maximum posterior probabilities for each group were highest for the groups in which they were indeed assigned. While there is no definite criteria for deciding what average maximum posterior probability values are close enough to 1, Nagin (2005) recommends 0.7 as a useful cut-off. The average classification probabilities were well above 0.7, with the exception of the one math (.67) and two science achievement (.68 and .69) mid-range groups. These trajectory groups were all situated between two similar trajectory groups (the Steady-70s and Flat-60s groups) and as such, slightly lower maximum posterior probabilities can be expected. With this in mind, the three lower probabilities are not expected to alter the results and

interpretations. Based on this, for the purposes of the current study, the models were all deemed to have suitable fit.

Table 2.7 *Average Assignment Probabilities Based on the Maximum Posterior Probability Assignment Rule for Math Achievement Trajectories Over Participants' Grade 10, 11 and 12 Years*

| Assigned Group <sup>a</sup> | Low-40s | Declining-60s | Flat-60s | Declining-70s | Steady-70s | High-80s | Range <sup>b</sup> |
|-----------------------------|---------|---------------|----------|---------------|------------|----------|--------------------|
| Low-40s (n=586)             | 0.92    | 0.01          | 0.07     | 0.00          | 0.00       | 0.00     | .449-1.00          |
| Declining-60s (n=323)       | 0.00    | 0.87          | 0.09     | 0.04          | 0.00       | 0.00     | .240-1.00          |
| Flat-60s (n=11543)          | 0.01    | 0.07          | 0.75     | 0.04          | 0.12       | 0.02     | .282-1.00          |
| Declining-70s (n=818)       | 0.00    | 0.01          | 0.15     | 0.67          | 0.17       | 0.00     | .343-.997          |
| Steady-70s (n=10363)        | 0.00    | 0.01          | 0.10     | 0.08          | 0.73       | 0.09     | .288-.991          |
| High-80s (n=7376)           | 0.00    | 0.00          | 0.00     | 0.01          | 0.09       | 0.90     | .285-1.00          |

*Note.* Low-40s = group 1, Declining-60s = group 2, Flat-60s = group 3, Declining-70s = group 4, Steady-70s = group 5, High-80s = group 6.

<sup>a</sup>Based upon maximum posterior probability assignment rule.

<sup>b</sup>Ranges reported for the assigned groups only.

Table 2.8 *Average Assignment Probabilities Based on the Maximum Posterior Probability Assignment Rule for Science Achievement Trajectories Over Participants' Grade 10, 11 and 12 Years*

| Assigned Group <sup>a</sup> | Low-40s | Declining-60s | Flat-60s | Declining-70s | High-70s | High-80s | Range <sup>b</sup> |
|-----------------------------|---------|---------------|----------|---------------|----------|----------|--------------------|
| Low-40s (n=489)             | 0.94    | 0.01          | 0.06     | 0.00          | 0.00     | 0.00     | .390-1.00          |
| Declining-60s (n=521)       | 0.00    | 0.81          | 0.12     | 0.06          | 0.00     | 0.00     | .270-1.00          |
| Flat-60s (n=6979)           | 0.01    | 0.12          | 0.68     | 0.15          | 0.03     | 0.02     | .241-1.00          |
| Declining-70s (n=8058)      | 0.00    | 0.04          | 0.12     | 0.69          | 0.14     | 0.01     | .223-.993          |
| High-70s (n=7611)           | 0.00    | 0.00          | 0.01     | 0.13          | 0.74     | 0.12     | .252-.977          |
| High-80s (n=7351)           | 0.00    | 0.00          | 0.00     | 0.01          | 0.11     | 0.87     | .237-1.00          |

*Note.* Low-40s = group 1, Declining-60s = group 2, Flat-60s = group 3, Declining-70s = group 4, Steady-70s = group 5, High-80s = group 6.

<sup>a</sup>Based upon maximum posterior probability assignment rule.

<sup>b</sup>Ranges reported for the assigned groups only.

Table 2.9 *Average Assignment Probabilities Based on the Maximum Posterior Probability Assignment Rule for Language Arts Achievement Trajectories Over Participants' Grade 10, 11 and 12 Years*

| Assigned Group <sup>a</sup> | Low-40s | Declining-60s | Flat-60s | Steady-70s | High-80s | Range <sup>b</sup> |
|-----------------------------|---------|---------------|----------|------------|----------|--------------------|
| Low-40s (n=489)             | 0.95    | 0.01          | 0.04     | 0.00       | 0.00     | .420-1.00          |
| Declining-60s (n=261)       | 0.00    | 0.96          | 0.03     | 0.00       | 0.00     | .518-1.00          |
| Flat-60s (n=9158)           | 0.01    | 0.01          | 0.86     | 0.11       | 0.01     | .326-1.00          |
| Steady-70s (n=11354)        | 0.00    | 0.00          | 0.08     | 0.83       | 0.08     | .313-.993          |
| High-80s (n=9747)           | 0.00    | 0.00          | 0.00     | 0.09       | 0.91     | .371-1.00          |

Note. Low-40s = group 1, Declining-60s = group 2, Flat-60s = group 3, Steady-70s = group 4, High-80s = group 5.

<sup>a</sup> Based upon maximum posterior probability assignment rule.

<sup>b</sup> Ranges reported for the assigned groups only.

Table 2.10 *Average Assignment Probabilities Based on the Maximum Posterior Probability Assignment Rule for Social Studies Achievement Trajectories Over Participants' Grade 10, 11 and 12 Years*

| Assigned Group <sup>a</sup> | Low-40s | Flat-60s | Steady-70s | High-80s | Range <sup>b</sup> |
|-----------------------------|---------|----------|------------|----------|--------------------|
| Low-40s (n=507)             | 0.94    | 0.06     | 0.00       | 0.00     | .515-1.00          |
| Flat-60s (n=8294)           | 0.01    | 0.84     | 0.13       | 0.02     | .336-1.00          |
| Steady-70s (n=10452)        | 0.00    | 0.10     | 0.78       | 0.11     | .329-.993          |
| High-80s (n=11756)          | 0.00    | 0.01     | 0.10       | 0.88     | .332-1.00          |

Note. Low-40s = group 1, Flat-60s = group 2, Steady-70s = group 3, High-80s = group 4.

<sup>a</sup> Based upon maximum posterior probability assignment rule.

<sup>b</sup> Ranges reported for the assigned groups only.

Table 2.11 *Average Assignment Probabilities Based on the Maximum Posterior Probability Assignment Rule for MSP-reimbursed Mental Health Service Utilization Trajectories Over Participants' Grade 10, 11 and 12 Years*

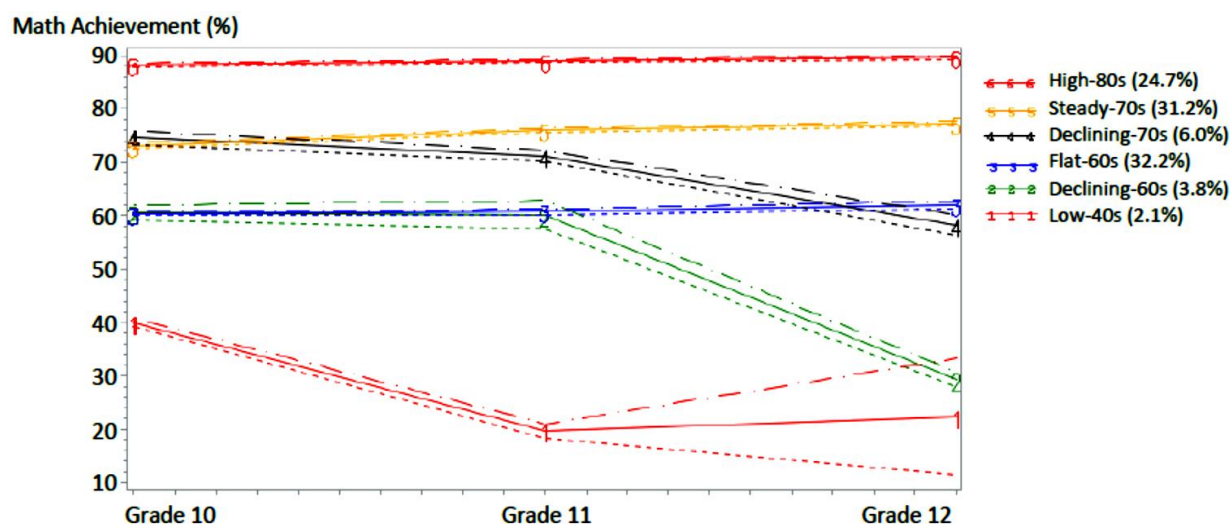
| Assigned Group <sup>a</sup> | Almost None | Moderate | High | Range <sup>b</sup> |
|-----------------------------|-------------|----------|------|--------------------|
| Almost None (n=27609)       | 0.99        | 0.01     | 0.00 | .51-1.00           |
| Moderate (n=3019)           | 0.03        | 0.97     | 0.00 | .50-1.00           |
| High (n=381)                | 0.00        | 0.02     | 0.98 | .53-1.00           |

## 2.3 Results

**Research Question 1: How can the academic achievement and MSP-reimbursed mental health service utilization trajectories of foreign-born adolescents in British Columbia be characterized, over the course of high school?**

**Math achievement.** We distinguished six math achievement trajectory groups in the present study, which have been identified as the Low-40s group, the Declining-60s group, the Flat-60s group, the Declining-70s group, the Steady-70s group, and the High-80s group. The trajectory groups are illustrated in Figure 2.1 below. The Low-40s group comprised of 2.1% of the study population (Canadian-born and foreign-born). This group (quadratic estimate = 11.67,  $SE = 2.72$ ,  $p = .000$ ) represented individuals with the lowest math achievement levels overall. While maintaining relatively low math grades, they displayed considerably more variability over time, as can be seen by the gradually increasing 95% confidence intervals over time for this group (denoted by the dotted lines). The Declining-60s group comprised of a slightly larger proportion of the study population (3.8%). This quadratic trajectory (quadratic estimate = -15.38,  $SE = 1.26$ ,  $p = .000$ ) was named Declining-60s because it represented a group who achieved a Grade 10 math score in the 60% range but it declined over time. In contrast, the Flat-60s group remained steadily in the 60% achievement range from grade 10 thru 12 (quadratic estimate = -.44,  $SE = .22$ ,  $p = .05$ ). This trajectory represented the largest proportion of the study population (32.2%). The Declining-70s group (6.0% of the study population) was characterized by decline from grade 10 (math scores slightly above 70%) to Grade 12 (math scores in the 60% range; quadratic estimate = -4.72,  $SE = .75$ ,  $p = .000$ ). The Steady-70s group stayed within the 70% math grade range over the three years, with a slight quadratic trajectory (quadratic estimate = -.90,  $SE = .15$ ,  $p = .000$ ). This group represented the second largest portion of the study

population (31.2%). The High-80s group represented 24.7% of the study population and was characterized by steadily high, slightly increasing levels of math achievement in the 80% range (linear estimate = .79,  $SE = .08$ ,  $p = .000$ ).



*Figure 2.1.* Math achievement trajectories for grade 10, 11, and 12 for the adolescent study population (Canadian- and foreign-born). Dotted lines flanking each solid line represent 95% confidence intervals.

To better understand the math achievement trajectories, academic profiles of group membership were examined. As recommended by Nagin (2005), group profiles were created by classifying individuals into groups according to their maximum probability of group membership. Descriptive statistics were run for all six groups to understand the academic characteristics of each group. As can be seen in Table 2.12, mean grades across groups showed patterns consistent with Figure 2.1. Table 2.12 also describes the proportion in each group who went on to complete Math 11 and Math 12. As can be seen from the table, aside from the Low-40s group, the five groups showed a consistently high proportion of students completing Math 11. There is considerably more variability in the proportions in each group who completed Math 12. Most notably, the Low-40s group was characterized by individuals who were far less likely

to complete Math 11 or 12 (over the three year time period of the study). By contrast, the High-80s, Declining-70s, and Declining-60s groups showed high completion of Math 11 and 12. Also, as might be expected, the High-80s group had a much higher proportion of students who had completed at least one advanced math course and a much lower proportion who had retaken a math course or failed a math course in the grade 10-12 years. Table 2.12 also summarizes the proportion of foreign-born students in each group: Most notably, more than double the proportion of foreign-born students made up the High-80s math achievement group. Also, note that a higher proportion of foreign-born students made up the declining trajectory groups (i.e., the Declining-60s and the Declining 70s; see Table 2.12).

Table 2.12 *Math Achievement Trajectory Group Academic Profiles*

|                            | Low-40s<br>(n=586) | Declining-60s<br>(n=323) | Flat-60s<br>(n=11543) | Declining-70s<br>(n=818) | Steady-70s<br>(n=10363) | High-80s<br>(n=7376) |
|----------------------------|--------------------|--------------------------|-----------------------|--------------------------|-------------------------|----------------------|
| MA10 ( <i>M, SD</i> )      | 39.59 (19.30)      | 63.55 (8.67)             | 59.93 (7.69)          | 78.49 (6.79)             | 73.24 (8.42)            | 89.06 (5.59)         |
| MA11 ( <i>M, SD</i> )      | 19.47 (10.37)      | 62.24 (9.35)             | 60.09 (8.17)          | 72.49 (8.28)             | 76.11 (7.72)            | 89.69 (5.89)         |
| MA12 ( <i>M, SD</i> )      | 20.25 (11.79)      | 28.65 (10.18)            | 61.22 (8.81)          | 55.24 (6.74)             | 76.85 (7.51)            | 90.17 (6.20)         |
| MA11 done (%) <sup>a</sup> | 48.98              | 98.45                    | 83.87                 | 100.00                   | 91.23                   | 95.72                |
| MA12 done (%) <sup>a</sup> | 0.01               | 96.59                    | 23.16                 | 95.48                    | 49.57                   | 86.20                |
| MA adv. (%)                | 0.20               | 0.60                     | 0.30                  | 2.60                     | 2.10                    | 9.90                 |
| MA retake (%)              | 28.80              | 33.40                    | 21.10                 | 16.60                    | 13.00                   | 8.70                 |
| MA fail (%)                | 23.90              | 22.00                    | 12.60                 | 6.00                     | 4.00                    | 0.50                 |
| % Can-born                 | 0.02               | 0.01                     | 39.42                 | 0.02                     | 35.93                   | 17.90                |
| % Foreign-born             | 0.02               | 0.02                     | 27.83                 | 0.05                     | 23.63                   | 36.05                |

*Note.* MA10 = Math 10 grade, MA11 = Math 11 grade, MA12 = Math 12 grade, Math adv. = Advanced math course, Can-born = Canadian-born.

<sup>a</sup>Math 11 is a requirement for high school graduation in the British Columbia provincial school system – Math 12 is not.

**Science achievement.** Six trajectory groups represented science achievement, and were identified as the Low-40s group, the Declining-60s group, the Flat-60s group, the Declining-70s group, the High-70s group, and the High-80s group. The trajectory groups are illustrated in Figure 2.2. The Low-40s group comprised of 1.8% of the study population. This group represented individuals with the lowest science achievement levels overall (quadratic estimate =

19.20,  $SE = 2.00$ ,  $p = .000$ ). As can be seen in Figure 2.2 by the gradually increasing 95% confidence intervals, they maintained low science grades although they displayed considerably more variability over time. The Declining-60s group was comprised of 5.2% of the study population. This quadratic trajectory (quadratic estimate = -13.56,  $SE = .55$ ,  $p = .000$ ) was labeled Declining-60s because it represented a group who achieved in the 60% range in Grade 10, but declined markedly after that. The Flat-60s group however, remained flat from Grade 10 to 12 (intercept = 58.13,  $SE = .16$ ,  $p = .000$ ) and represented 18.9% of the study population. The Declining-70s group (one of the largest groups; 24.6% of the study population) was characterized by slight decline in the 70% grade range (quadratic estimate = -5.98,  $SE = .20$ ,  $p = .000$ ). The High-70s group stayed within the high 70% math grade range over the three years, with a slight quadratic trajectory (quadratic estimate = -2.81,  $SE = .14$ ,  $p = .000$ ). This group represented one of the largest proportions of the study population (25.2%). The High-80s group represented 24.3% of the study population and was characterized by consistently high levels of science achievement in the high 80% range (quadratic estimate = -1.70,  $SE = .12$ ,  $p = .000$ ).

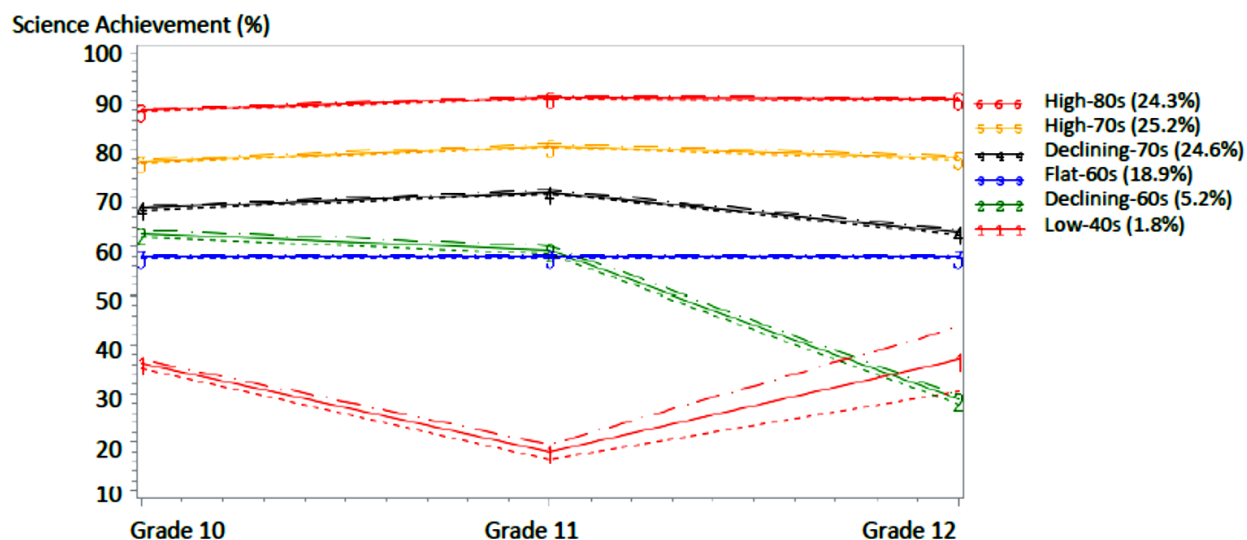


Figure 2.2. Science achievement trajectories for grade 10, 11, and 12 for the adolescent study population (Canadian- and foreign-born). Dotted lines flanking each solid line represent 95% confidence intervals.

Science achievement trajectories were further examined by developing academic profiles of group membership for all six groups. As can be seen in Table 2.13, mean grades across groups show patterns consistent with Figure 2.2. Table 2.13 also describes the proportion in each group who went on to complete Science 11 and Science 12 coursework. As can be seen, aside from the Low-40s group, the other five groups had a high proportion of students completing Science 11 coursework. As with the math trajectories, there was considerably more variability in the proportions in each group who had completed Science 12 coursework. Most notably, the Low-40s group was characterized by individuals who were far less likely to complete Math 11 or 12 (over the three year time period of the study). By contrast, the High-80s group showed high completion of Math 11 and 12. As with the math trajectory group, the High-80s group had a much higher proportion of students who completed at least one advanced science course and a much lower proportion who had retaken a science course or failed a science course in the grade 10-12 years. Table 2.13 also summarizes the proportion of foreign-born students in each group:



As with math achievement, foreign-born students were over-represented in the High-80s science achievement group as well as the Declining-60s group and under-represented in all other groups.

Table 2.13 *Science Achievement Trajectory Group Academic Profiles*

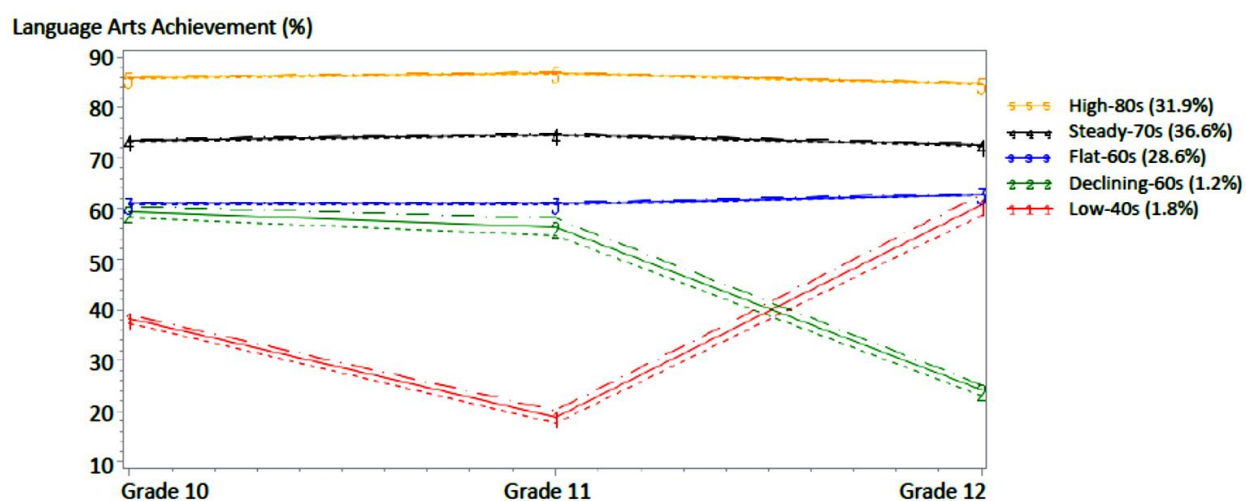
|                            | Low-40s<br>( <i>n</i> =489) | Declining-60s<br>( <i>n</i> =521) | Flat-60s<br>( <i>n</i> =6979) | Declining-70s<br>( <i>n</i> =8058) | Steady-70s<br>( <i>n</i> =7611) | High-80s<br>( <i>n</i> =7351) |
|----------------------------|-----------------------------|-----------------------------------|-------------------------------|------------------------------------|---------------------------------|-------------------------------|
| SC10 ( <i>M, SD</i> )      | 35.97 (18.45)               | 64.48 (8.49)                      | 58.22 (6.79)                  | 67.85 (7.60)                       | 77.82 (6.51)                    | 88.61 (5.12)                  |
| SC11 ( <i>M, SD</i> )      | 18.01 (10.03)               | 60.48 (10.06)                     | 56.70 (7.08)                  | 71.51 (7.14)                       | 80.88 (6.36)                    | 91.40 (4.59)                  |
| SC12 ( <i>M, SD</i> )      | 38.76 (21.20)               | 28.49 (10.40)                     | 56.28 (8.67)                  | 62.53 (7.82)                       | 78.01 (6.58)                    | 90.86 (5.12)                  |
| SC11 done (%) <sup>a</sup> | 39.26                       | 95.59                             | 78.78                         | 88.97                              | 91.89                           | 95.37                         |
| SC12 done (%) <sup>a</sup> | 0.03                        | 79.46                             | 18.03                         | 43.24                              | 68.30                           | 87.08                         |
| SC adv. (%)                | 0.00                        | 1.00                              | 0.20                          | 0.80                               | 2.50                            | 6.60                          |
| SC retake (%)              | 26.60                       | 15.90                             | 15.70                         | 9.50                               | 8.50                            | 7.59                          |
| SC fail (%)                | 25.60                       | 13.40                             | 12.70                         | 5.00                               | 2.00                            | 0.50                          |
| % Can.-born                | 0.02                        | 0.01                              | 24.08                         | 27.36                              | 24.79                           | 18.56                         |
| % Foreign-born             | 0.01                        | 0.03                              | 16.22                         | 19.82                              | 21.35                           | 34.12                         |

*Note.* SC10 = Science 10 grade, SC 11 = Science 11 grade, SC 12 = Science 12 grade, SC adv. = Advanced science course, Can.-born = Canadian-born.

<sup>a</sup>Science 11 is a requirement for high school graduation in the British Columbia provincial school system – Science 12 is not.

**Language arts achievement.** Five trajectory groups were found to best represent language arts achievement and have been named the Low-40s group, the Declining-60s group, the Flat-60s group, the Steady-70s group, and the High-80s group. The trajectory groups are illustrated in Figure 2.3 below. The Low-40s group comprised of 1.8% of the study population. This group (quadratic estimate = 30.40,  $SE = .83$ ,  $p = .000$ ) represented individuals with the lowest language arts achievement levels overall, however, language arts scores were much higher by Grade 12 for this group. It is important to note, however, that not all members of the Low-40s group continued on to Grade 12 language arts, so this increasing trend was most likely a result of this (i.e., the lowest students dropped out prior to grade 12, which meant that the mean for grade 12 increased). The Declining-60s group was comprised of 1.2% of the study population. This quadratic trajectory (quadratic estimate = -15.28,  $SE = .96$ ,  $p = .000$ ) was named Declining-60s because it represented a group who achieved in the 60% range in grade 10, but

declined markedly after that. The Flat-60s group was characterized by high levels of language arts achievement in the 60% range from grade 10 to 12 (quadratic estimate = .89,  $SE = .12$ ,  $p = .000$ ) and represented 28.6% of the study population. The Steady-70s group (the largest group accounting for 36.6% of the study population) was characterized by grades in 70% range (quadratic estimate = -1.74,  $SE = .10$ ,  $p = .000$ ). The High-80s group (representing 31.9% of the study population) was characterized by language arts grades in the high 80% range over the three years with a slight quadratic trajectory (quadratic estimate = -1.58,  $SE = .09$ ,  $p = .000$ ).



*Figure 2.3.* Language arts achievement trajectories for grade 10, 11, and 12 for the adolescent study population (Canadian- and foreign-born). Dotted lines flanking each solid line represent 95% confidence intervals.

Language arts achievement trajectories were further examined by developing academic profiles of group membership for all five groups. As can be seen in Table 2.14, mean grades across groups showed patterns consistent with Figure 2.3. Aside from the Low-40s group, the other five groups showed a consistently high proportion of students completing Language arts 11 and Language arts 12 coursework. The higher proportion of students completing the Language arts 12 (in comparison to math and science) was expected because Language arts 12 is a

graduation requirement; whereas math and science 12 coursework are not required for graduation. Similar to the math and science trajectories, the High-80s group had a much higher proportion of students who completed at least one advanced language arts course and a much lower proportion who had retaken a language arts course or failed a language arts course in the grade 10-12 years. Table 2.14 also summarizes the proportion of foreign-born students in each group: Consistent with the science achievement trajectories, foreign-born students were over-represented in the High-80s Language arts achievement group and under-represented in all other groups.

Table 2.14 *Language Arts Achievement Trajectory Group Academic Profiles*

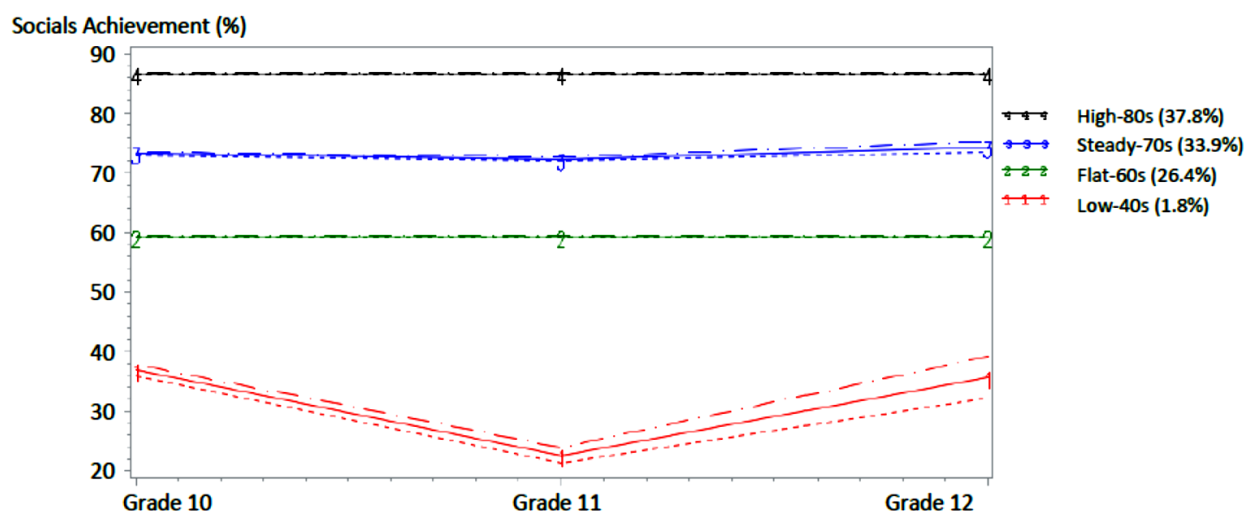
|                            | Low-40s<br>( <i>n</i> =489) | Declining-60s<br>( <i>n</i> =261) | Flat-60s<br>( <i>n</i> =9158) | Steady-70s<br>( <i>n</i> =11354) | High-80s<br>( <i>n</i> =9747) |
|----------------------------|-----------------------------|-----------------------------------|-------------------------------|----------------------------------|-------------------------------|
| LA10 ( <i>M, SD</i> )      | 38.25 (18.05)               | 59.83 (10.25)                     | 60.69 (7.16)                  | 73.52 (6.75)                     | 86.33 (5.30)                  |
| LA11 ( <i>M, SD</i> )      | 19.11 (10.72)               | 58.39 (12.97)                     | 60.62 (7.64)                  | 74.87 (6.52)                     | 87.20 (5.24)                  |
| LA12 ( <i>M, SD</i> )      | 61.12 (12.92)               | 23.53 (11.20)                     | 62.56 (7.72)                  | 72.62 (6.42)                     | 84.98 (5.59)                  |
| LA11 done (%) <sup>a</sup> | 44.99                       | 89.27                             | 84.01                         | 91.61                            | 95.04                         |
| LA12 done (%) <sup>a</sup> | 17.38                       | 100.00                            | 78.81                         | 89.96                            | 94.28                         |
| LA adv. (%)                | 0.00                        | 0.00                              | 0.10                          | 1.40                             | 6.10                          |
| LA retake (%)              | 27.40                       | 34.90                             | 17.20                         | 7.10                             | 3.70                          |
| LA fail (%)                | 24.70                       | 29.10                             | 11.20                         | 2.30                             | 0.20                          |
| % Can.-born                | 0.02                        | 0.01                              | 30.13                         | 36.76                            | 28.18                         |
| % Foreign-born             | 0.01                        | 0.01                              | 24.95                         | 32.24                            | 36.30                         |

Note. LA10 = Language arts 10 grade, LA11 = Language arts 11 grade, LA12 = Language arts 12 grade, LA adv. = Advanced language arts course, Can.-born = Canadian-born.

<sup>a</sup>Language arts 11 and 12 are requirements for high school graduation in the British Columbia provincial school system.

**Social studies achievement.** Four trajectory groups were found to best represent social studies achievement in the present study and were named the Low-40s group, the Flat-60s group, the Steady-70s group, and the High-80s group. The trajectory groups are illustrated in Figure 2.4 below. The Low-40s group comprised of 1.8% of the study population. This group (quadratic estimate = 13.58, *SE* = 1.07, *p* = .000) represented individuals with the lowest social studies achievement levels overall. The Flat-60s group was characterized by consistent levels of social

studies achievement in the 60% range from grade 10 to 12 (intercept = 59.43,  $SE = .11$ ,  $p = .000$ ) and represented 26.4% of the study population. The Steady-70s group (comprising 33.9% of the study population) was characterized by grades in the 70% range (quadratic estimate = 1.32,  $SE = .24$ ,  $p = .000$ ). The High-80s group (the largest group, representing 37.8% of the study population) was characterized by social studies grades steadily in the high 80% range over the three years (intercept = 86.87,  $SE = .08$ ,  $p = .000$ ).



*Figure 2.4.* Social studies achievement trajectories for grade 10, 11, and 12 for the adolescent study population (Canadian- and foreign-born). Dotted lines flanking each solid line represent 95% confidence intervals.

Social studies achievement trajectories were further characterized by developing academic profiles of group membership for all four groups. As can be seen in Table 2.15, mean grades across groups show patterns consistent with Figure 2.4. In terms of course completion, Table 2.15 shows a steady increase in the completion of social studies 11 from the low-40s groups up to the High-80s group. While this pattern also held true to the social studies 12 coursework completion, note that the overall proportion of students who had completed social studies 12 was low across all groups. As with all of academic subjects, a higher proportion of

students in the High-80s trajectory group completed at least one advanced social studies course, and a much lower proportion had retaken or failed a social studies course in the grade 10-12 years. Again, foreign-born students were over-represented in the High-80s social studies achievement group and under-represented in all other groups.

Table 2.15 *Social Studies Achievement Trajectory Group Academic Profiles*

|                            | Low-40s<br>(n=507) | Flat-60s<br>(n=8294) | Steady-70s<br>(n=10452) | High-80s<br>(n=11756) |
|----------------------------|--------------------|----------------------|-------------------------|-----------------------|
| SS10 ( <i>M, SD</i> )      | 36.51 (17.97)      | 58.66 (6.95)         | 73.40 (6.80)            | 87.45 (5.59)          |
| SS11 ( <i>M, SD</i> )      | 22.68 (11.28)      | 58.90 (7.50)         | 72.43 (6.82)            | 87.10 (5.68)          |
| SS12 ( <i>M, SD</i> )      | 34.64 (18.33)      | 59.82 (9.73)         | 74.61 (7.91)            | 87.56 (5.45)          |
| SS11 done (%) <sup>a</sup> | 41.22              | 77.26                | 88.52                   | 92.07                 |
| SS12 done (%) <sup>a</sup> | 9.86               | 7.23                 | 4.66                    | 1.84                  |
| SS adv. (%)                | 0.00               | 0.20                 | 1.00                    | 4.10                  |
| SS retake (%)              | 26.00              | 13.40                | 3.60                    | 1.40                  |
| SS fail (%)                | 24.30              | 11.30                | 2.00                    | 0.10                  |
| % Can.-born                | 1.73               | 28.02                | 34.59                   | 33.34                 |
| % Foreign-born             | 1.23               | 22.80                | 24.38                   | 45.41                 |

*Note.* SS10 = Social studies 10 grade, Social studies 11 grade, Social studies 12 grade, SS adv. = Advanced social studies course, Can.-born = Canadian-born.

<sup>a</sup>Social Studies 11 is a requirement for high school graduation in the British Columbia provincial school system – Social Studies 12 is not.

**MSP-reimbursed mental health service utilization.** Three trajectory groups were found to best represent MSP-reimbursed mental health service utilization in the present study and were named the Almost None group, the Moderate group, and the High group. The trajectory groups are illustrated in Figure 2.5 below. The Almost None group comprised the vast majority of the study population (88.6%) and this group had virtually no MSP-reimbursed mental health service utilization (not completely zero) over the course of their grade 10 to 12 years (intercept = -3.11,  $SE = .02$ ,  $p = .000$ ). The Moderate group (comprising 10.2% of the study population) was characterized by moderate MSP-reimbursed mental health service utilization (a few per year) over the grade 10 to 12 years (quadratic estimate = -.26,  $SE = .01$ ,  $p = .000$ ). The High group (the smallest group, representing 1.2% of the study population) was characterized by a high number

of MSP-reimbursed mental health service utilization over the grade 10 to 12 years (quadratic estimate = -0.38,  $SE = .02$ ,  $p = .000$ ).

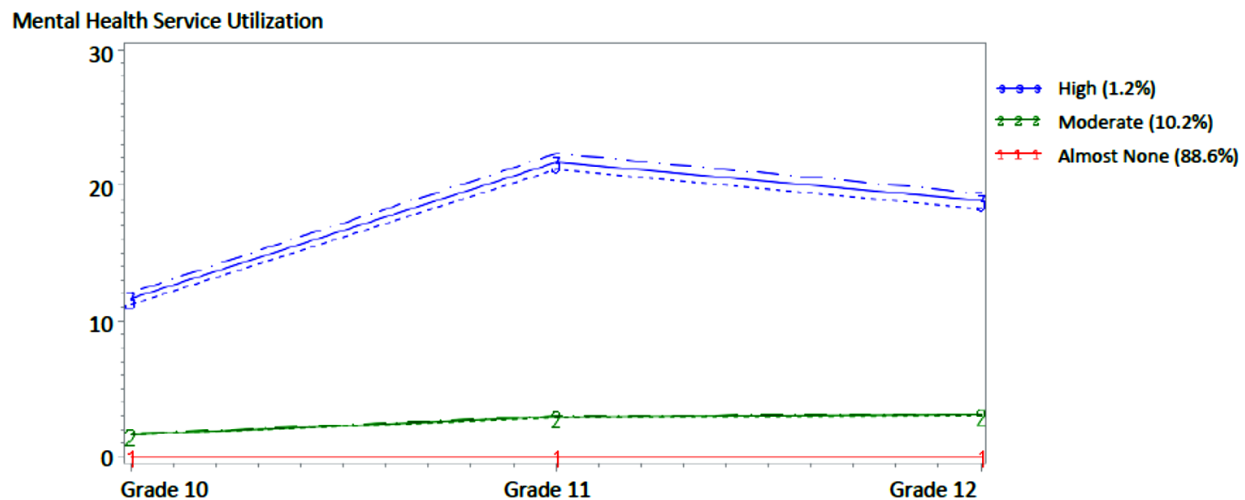


Figure 2.5. MSP-reimbursed mental health service utilization trajectories for grade 10, 11, and 12 for the adolescent study population (Canadian- and foreign-born). Dotted lines flanking each solid line represent 95% confidence intervals.

MSP-reimbursed mental health service utilization trajectories were further characterized by developing profiles of group membership for all three groups. As can be seen in Table 2.16, the frequencies of MSP-reimbursed mental health service utilization across groups show a pattern consistent with Figure 2.5. In the case of MSP-reimbursed mental health service utilization, foreign-born students were over-represented in the Almost None group while being under-represented in all other groups.

Table 2.16 *MSP-reimbursed Mental Health Service Utilization Trajectory Group Profiles*

|                            | Almost none<br>( <i>n</i> =27609) | Moderate<br>( <i>n</i> =3019) | High<br>( <i>n</i> =381) |
|----------------------------|-----------------------------------|-------------------------------|--------------------------|
| Grade 10 MHSU <sup>a</sup> | 0.04 (.23)                        | 1.73 (2.64)                   | 11.67 (15.99)            |
| Grade 11 MHSU <sup>a</sup> | 0.04 (.26)                        | 3.02 (3.57)                   | 21.70 (23.56)            |
| Grade 12 MHSU <sup>a</sup> | 0.06 (.29)                        | 3.18 (3.91)                   | 18.80 (21.48)            |
| % Can.-born                | 85.16                             | 11.20                         | 1.33                     |
| % Foreign-born             | 89.43                             | 5.06                          | 0.86                     |

Note. MHSU = MSP-reimbursed Mental Health Service Utilization

<sup>a</sup>Frequency of MSP-reimbursed Mental Health Service Utilizations in the Grade 10, 11, and 12 years (means and standard deviations provided).

**Research Question 2: How do sex, age, age of arrival, English language ability, socioeconomic status, migration class, and birth country impact the academic achievement and MSP-reimbursed mental health service utilization trajectories of foreign-born adolescents in British Columbia, over the course of high school?**

Multinomial logistic regression models were run to assess whether trajectory group membership (for math, science, language arts, social studies) was predicted by sex, age, age of arrival, English language learner status, socioeconomic status, migration class (economic, family and refugee classes) and birth country (the top three source countries were included; Philippines, China, India). The same predictors were included in the MSP-reimbursed mental health service utilization model with the addition of an indicator of special needs at school to account for those students who are likely to utilize a disproportionate amount of mental health services. The analyses were modeled to compare each trajectory group with a reference group (the Low-40s group for academic model and the Almost None group for the mental health service utilization model). Note that, as a second step, interaction terms were created and entered into the model to identify whether being foreign-born moderates the role of sex, age or socioeconomic status. Age X Cohort was significant in the science and social studies models. SES X Cohort was significant in the MSP-reimbursed mental health service utilization model. Only significant interaction terms were retained in the final models. See Tables 2.17-2.20 (math, science, language arts, and social studies) and Table 2.25 (MSP-reimbursed mental health service utilization) for the logistic regression results. Finally, in order to clearly illustrate the relative impact of each predictor on the probability of membership in each group and also the cumulative probability of predictors that are assets and risks, group membership probabilities were calculated and presented in Tables 2.21-2.24 (math, science, language arts, and social studies) and Table 2.26 (MSP-reimbursed

mental health service utilization). Note that the group membership probability tables have been heat-mapped to more easily illustrate trends (darker shading indicates higher probabilities and lighter shading indicates lower probabilities within each table).

### **Academic trajectories.**

**Sex.** As can be seen in Tables 2.17-2.20, females consistently showed higher odds of belonging to the academic trajectories marked by high achievement, in comparison to the Low-40s group. This was true for math and science ( $OR_{\text{High-80s}}=1.65, p = .000$  and  $OR_{\text{High-80s}}=2.18, p = .000$ , respectively), and was even more marked for the language arts and social studies trajectories ( $OR_{\text{High-80s}}=3.74, p = .000$  and  $OR_{\text{High-80s}}=2.53, p = .000$ , respectively).

**Age.** Age estimates were almost exclusively negative across the trajectory groups in all academic models, which indicated that the Low-40s groups were comprised of older than average students than the groups characterized by higher achievement (see Tables 2.17-2.20 for specific beta and odds ratio values). The group membership probability tables further distinguished between students who were considered older than average and younger than average (calculated one standard deviation above and below the mean). This distinction provided the added insight that being younger than average followed a similar trend as being older than average (although to a lesser degree; see Tables 2.21-2.24). Also note that a significant Age X Cohort interaction was found in the case of the social studies trajectory groups as well as the science Declining-60s group which indicated that the strength of the association between age and trajectory group membership was even stronger for the foreign-born cohort.

**Age of arrival.** Age of arrival significantly predicted group membership in all High-80s trajectory groups such that foreign-born students who arrived in Canada at an earlier age were more likely to belong to the High-80s group, in comparison to the corresponding Low-40s



groups (see Tables 2.17-2.20 for specific beta and odds ratio values). The group membership probability tables similarly illustrate a mild decrease in the probability of group membership in all academic trajectory groups as age of arrival increases, with the exception of the Low-40s group. As age of arrival increases, there is a pattern of increasing probability of membership in the Low-40s groups (see Tables 2.21-2.24).

***English language learner status.*** There was very little predictive utility of being an English language learner with respect to the math and science academic trajectory models – although ELL status was associated with a slightly decreased odds of belonging to the Steady-70s and Flat-60s math trajectories as well as the Declining-70s and High-70s science trajectories (see Tables 2.17 and 2.18 for specific odds ratios). However, English language learner status was found to be negatively predictive of group membership in the language arts and social studies high achieving trajectory groups. That is to say, English language learners were less likely to be in the language arts and social studies High-80s and Steady-70s groups, in comparison to the Low-40s groups (see Table 2.19 and 2.20). This pattern is similarly represented in the language arts and social studies group membership probability tables which illustrate a trend towards higher probability of membership in the trajectories characterized by low achievement, particularly in the case of language arts (see Tables 2.23 and 2.24).

***Socioeconomic status (SES).*** Neighborhood income decile (used as a proxy for socioeconomic status) was positively associated with membership in virtually all math, science, language arts and social studies groups, in comparison to the Low-40s reference group (with the one exception of the language arts Declining-60s group, where SES does not emerge as significant; see Table 2.19). Most notably, the odds of belonging in the High-80s groups for math, science, language arts and social studies increased at least two-fold for every unit increase

in socioeconomic status ( $OR_{\text{High-80s}}=2.18, p = .000$ ,  $OR_{\text{High-80s}}=2.48, p = .000$ ,  $OR_{\text{High-80s}}=2.34, p = .000$ , and  $OR_{\text{High-80s}}=2.10, p = .000$ , respectively; see Table 2.17-2.20 for other odds ratios). The probability of group membership tables (Tables 2.21-2.24) reflect this pattern, but reveal a further distinction between low and high income deciles: whereas high income deciles (calculated at one standard deviation above the mean) were associated with higher probability of membership in the high achievement groups, low income deciles (calculated at one standard deviation below the mean) did not illustrate a similar pattern in the opposite direction (i.e., low probability of membership in the high achievement groups or high probability of membership in the low groups).

**Migration class.** Economic, family, and refugee classes were not, for any of the academic trajectories, significantly more likely to be in the Low-40s trajectory groups (see Tables 2.17-2.20 for specific odds ratios). However, economic class status was found to be powerfully predictive of group membership in the academic trajectories characterized by high achievement (i.e., all High-80s groups). Economic class status increased the odds of being in the High-80s groups, in comparison to the Low-40s groups) by 14.73, 21.25, 23.57 and 21.76 for math, science, language arts and social studies, respectively ( $p = .000$  in all cases). Family class was also associated with a greater likelihood of membership in the High-80s groups in comparison to the Low-40s groups although to a lesser degree than for the economic class (see Tables 2.17-2.20 for specific odds ratios). Refugee class was rarely significantly predictive of group membership in the models (in comparison to the Low-40s group) with a few exceptions. Refugee class was associated with a higher odds of being in the Declining-60s group for math and science ( $OR_{\text{Declining-60s}}=3.03, p = .01$ ,  $OR_{\text{Declining-60s}}=3.82, p = .000$ ) as well as a higher odds of belonging to the language arts High-80s group versus the Low-40s group ( $OR_{\text{High-80s}}=2.03, p = .000$ ).

These results are similarly illustrated in the group membership probability tables (see Tables 2.21-2.24).

***Birth country.*** Being born in China did not emerge consistently as a significant predictor of academic trajectory group membership. For example, being born in China significantly decreased the odds of belonging to the math Steady-70s and Flat-60s trajectory groups but did increase the odds of belonging to the science and language arts High-80s trajectory groups, in comparison to the Low-40s groups (see Tables 2.18-2.19). Although generally not emerging as predictive of trajectory group membership, being born in the Philippines was associated with a decreased likelihood of membership in the math, science, and language arts High-80s groups (see Table 2.17-2.19). Finally, being born in India was not predictive of academic trajectory group membership in any case (see Tables 2.17-2.20). The group membership probability tables serve to illustrate additional nuances to these results (see Tables 2.21-2.24). For example, the group membership probability tables provide some indication of a bi-modal probability distribution amongst the achievement groups such that being born in China is often associated with higher probabilities of group membership on the two extreme ends of the achievement group spectrums (the High-80s groups and the Low-40s groups). By contrast, for those born in the Philippines, the group membership probability tables reveal a pattern of greater concentration of probabilities in the mid-range academic trajectory groups and lower probabilities in the high and low achievement groups. By contrast, there is a relatively even distribution of probabilities across all trajectory groups for those born in India.

***Cumulative predictors.*** To capture the cumulative role of characteristics that are predictive of high achievement and low achievement, two cumulative predictors were created. A cumulative risk factor was created in which estimates associated with consistent prediction of

lower achievement were combined. A cumulative asset factor was similarly created such that predictors with consistent prediction of higher achievement were combined. The cumulative risk factor included: English language learner status, older age of arrival (between the ages of 15-19), and being older than average. In contrast, the cumulative asset factor included: being female, economic class, and high SES. Both the cumulative risk and asset factors yielded high probabilities of group membership at each end of the academic trajectory group spectrum. The combination of English language learner status, arriving at an older age (between the ages of 15-19), and being older than average in school was associated with virtually no probability of membership in the achievement trajectories characterized by high achievement (see Tables 2.21-2.24). In contrast, being female, economic class and high SES was associated with a 66-94% probability of belonging to the High-80s achievement trajectories (see Tables 2.21-2.24).

Table 2.17 *Multinomial Logistic Regression Results in Predicting Math Achievement Trajectories*

|                | <u>High-80s</u> |           |           |          | <u>Steady-70s</u> |           |           |          | <u>Declining-70s</u> |           |           |          | <u>Flat-60s</u> |           |           |          | <u>Declining-60s</u> |           |           |          |
|----------------|-----------------|-----------|-----------|----------|-------------------|-----------|-----------|----------|----------------------|-----------|-----------|----------|-----------------|-----------|-----------|----------|----------------------|-----------|-----------|----------|
|                | <i>B</i>        | <i>SE</i> | <i>OR</i> | <i>p</i> | <i>B</i>          | <i>SE</i> | <i>OR</i> | <i>p</i> | <i>B</i>             | <i>SE</i> | <i>OR</i> | <i>p</i> | <i>B</i>        | <i>SE</i> | <i>OR</i> | <i>p</i> | <i>B</i>             | <i>SE</i> | <i>OR</i> | <i>p</i> |
| sex            | 0.50            | 0.09      | 1.65      | 0.00     | 0.35              | 0.09      | 1.42      | 0.00     | 0.23                 | 0.13      | 1.26      | 0.08     | 0.05            | 0.10      | 1.05      | 0.62     | -0.11                | 0.16      | 0.90      | 0.48     |
| Age            | -1.18           | 0.11      | 0.31      | 0.00     | -0.86             | 0.11      | 0.42      | 0.00     | -1.05                | 0.15      | 0.35      | 0.00     | -0.76           | 0.12      | 0.47      | 0.00     | -0.01                | 0.25      | 0.99      | 0.96     |
| Age of arrival | -0.40           | 0.10      | 0.67      | 0.00     | -0.38             | 0.10      | 0.68      | 0.00     | -0.32                | 0.12      | 0.73      | 0.01     | -0.31           | 0.10      | 0.73      | 0.00     | -0.29                | 0.13      | 0.75      | 0.03     |
| ELL            | 0.01            | 0.11      | 1.01      | 0.96     | -0.40             | 0.11      | 0.67      | 0.00     | 0.01                 | 0.15      | 0.99      | 0.99     | -0.25           | 0.11      | 0.78      | 0.03     | 0.23                 | 0.18      | 1.26      | 0.21     |
| SES            | 0.78            | 0.08      | 2.18      | 0.00     | 0.55              | 0.08      | 1.73      | 0.00     | 0.61                 | 0.11      | 1.84      | 0.00     | 0.42            | 0.08      | 1.52      | 0.00     | 0.48                 | 0.12      | 1.61      | 0.00     |
| Economic class | 2.69            | 0.32      | 14.73     | 0.00     | 1.65              | 0.32      | 5.21      | 0.00     | 2.11                 | 0.36      | 8.25      | 0.00     | 1.17            | 0.32      | 3.22      | 0.00     | 1.35                 | 0.43      | 3.86      | 0.00     |
| Family class   | 0.79            | 0.34      | 2.20      | 0.02     | 0.69              | 0.34      | 1.99      | 0.04     | 1.03                 | 0.41      | 2.80      | 0.01     | 0.77            | 0.34      | 2.16      | 0.02     | 1.28                 | 0.48      | 3.60      | 0.01     |
| Refugee class  | -0.12           | 0.34      | 0.89      | 0.72     | 0.41              | 0.32      | 1.51      | 0.21     | 0.29                 | 0.45      | 1.34      | 0.52     | 0.62            | 0.32      | 1.86      | 0.05     | 1.11                 | 0.42      | 3.03      | 0.01     |
| Philippines    | -0.80           | 0.28      | 0.45      | 0.00     | 0.00              | 0.28      | 1.00      | 0.99     | 0.29                 | 0.31      | 1.34      | 0.35     | 0.39            | 0.28      | 1.48      | 0.16     | -0.34                | 0.44      | 0.71      | 0.44     |
| China          | 0.21            | 0.31      | 1.23      | 0.50     | -0.65             | 0.32      | 0.52      | 0.04     | -0.55                | 0.37      | 0.58      | 0.14     | -1.64           | 0.36      | 0.19      | 0.00     | -0.46                | 0.41      | 0.63      | 0.25     |
| India          | -0.30           | 0.34      | 0.74      | 0.38     | -0.30             | 0.35      | 0.74      | 0.39     | -0.15                | 0.41      | 0.86      | 0.70     | -0.16           | 0.35      | 0.85      | 0.64     | -0.25                | 0.45      | 0.78      | 0.57     |

*Note.* Females were coded as 1 (males 0). The Low-40s group is the reference group in the analyses.

Table 2.18 *Multinomial Logistic Regression Results in Predicting Science Achievement Trajectories*

|                | <u>High-80s</u> |           |           |          | <u>High-70s</u> |           |           |          | <u>Declining-70s</u> |           |           |          | <u>Flat-60s</u> |           |           |          | <u>Declining-60s</u> |           |           |          |
|----------------|-----------------|-----------|-----------|----------|-----------------|-----------|-----------|----------|----------------------|-----------|-----------|----------|-----------------|-----------|-----------|----------|----------------------|-----------|-----------|----------|
|                | <i>B</i>        | <i>SE</i> | <i>OR</i> | <i>p</i> | <i>B</i>        | <i>SE</i> | <i>OR</i> | <i>p</i> | <i>B</i>             | <i>SE</i> | <i>OR</i> | <i>p</i> | <i>B</i>        | <i>SE</i> | <i>OR</i> | <i>p</i> | <i>B</i>             | <i>SE</i> | <i>OR</i> | <i>p</i> |
| Sex            | 0.78            | 0.10      | 2.18      | 0.00     | 0.67            | 0.10      | 1.95      | 0.00     | 0.35                 | 0.10      | 1.42      | 0.00     | 0.10            | 0.11      | 3.06      | 0.33     | -0.22                | 0.14      | 0.80      | 0.12     |
| Age            | -1.28           | 0.11      | 0.28      | 0.00     | -1.00           | 0.12      | 0.37      | 0.00     | -0.90                | 0.12      | 0.41      | 0.00     | -0.50           | 0.12      | 0.61      | 0.00     | -0.55                | 0.19      | 0.58      | 0.00     |
| Age of arrival | -0.59           | 0.12      | 0.55      | 0.00     | -0.50           | 0.12      | 0.61      | 0.00     | -0.49                | 0.12      | 0.61      | 0.00     | -0.13           | 0.12      | 0.88      | 0.29     | -0.64                | 0.14      | 0.53      | 0.00     |
| ELL            | -0.12           | 0.12      | 0.89      | 0.33     | -0.26           | 0.12      | 0.77      | 0.03     | -0.38                | 0.12      | 0.68      | 0.00     | -0.11           | 0.13      | 0.90      | 0.40     | -0.08                | 0.16      | 0.92      | 0.60     |
| SES            | 0.91            | 0.08      | 2.48      | 0.00     | 0.77            | 0.08      | 2.16      | 0.00     | 0.56                 | 0.08      | 1.75      | 0.00     | 0.50            | 0.09      | 1.65      | 0.00     | 0.39                 | 0.11      | 1.48      | 0.00     |
| Economic class | 3.07            | 0.35      | 21.50     | 0.00     | 2.16            | 0.35      | 8.67      | 0.00     | 1.90                 | 0.36      | 6.69      | 0.00     | 0.62            | 0.38      | 1.86      | 0.10     | 2.04                 | 0.41      | 7.69      | 0.00     |
| Family class   | 0.90            | 0.36      | 5.21      | 0.01     | 0.69            | 0.37      | 1.77      | 0.06     | 0.77                 | 0.37      | 2.16      | 0.04     | -0.01           | 0.40      | 0.99      | 0.99     | 1.47                 | 0.45      | 4.35      | 0.00     |
| Refugee class  | 0.30            | 0.36      | 1.35      | 0.40     | 0.51            | 0.36      | 1.67      | 0.15     | 0.73                 | 0.35      | 2.08      | 0.04     | 0.28            | 0.36      | 1.32      | 0.44     | 1.34                 | 0.41      | 3.82      | 0.00     |
| Philippines    | -0.76           | 0.29      | 0.47      | 0.01     | 0.06            | 0.29      | 1.06      | 0.85     | 0.13                 | 0.29      | 1.14      | 0.65     | 0.48            | 0.30      | 1.62      | 0.11     | -0.24                | 0.37      | 0.79      | 0.52     |
| China          | 0.73            | 0.37      | 2.08      | 0.05     | 0.02            | 0.37      | 1.02      | 0.96     | -0.63                | 0.39      | 0.53      | 0.11     | -0.36           | 0.40      | 0.70      | 0.37     | -0.31                | 0.45      | 0.73      | 0.49     |
| India          | 0.27            | 0.41      | 1.31      | 0.50     | 0.13            | 0.42      | 1.14      | 0.76     | 0.03                 | 0.42      | 1.03      | 0.95     | 0.50            | 0.42      | 1.65      | 0.24     | -0.33                | 0.55      | 0.72      | 0.55     |
| AgeBYcohort    | -0.05           | 0.05      | 0.95      | 0.29     | -0.08           | 0.05      | 0.92      | 0.12     | -0.08                | 0.05      | 0.92      | 0.16     | 0.03            | 0.06      | 1.03      | 0.60     | -0.21                | 0.08      | 0.81      | 0.01     |

*Note.* Females were coded as 1 (males 0). The Low-40s group is the reference group in the analyses.

Table 2.19 *Multinomial Logistic Regression Results in Predicting Language Arts Achievement Trajectories*

|                | <u>High-80s</u> |           |           |          | <u>Steady-70s</u> |           |           |          | <u>Flat-60s</u> |           |           |          | <u>Declining-60s</u> |           |           |          |
|----------------|-----------------|-----------|-----------|----------|-------------------|-----------|-----------|----------|-----------------|-----------|-----------|----------|----------------------|-----------|-----------|----------|
|                | <i>B</i>        | <i>SE</i> | <i>OR</i> | <i>p</i> | <i>B</i>          | <i>SE</i> | <i>OR</i> | <i>p</i> | <i>B</i>        | <i>SE</i> | <i>OR</i> | <i>p</i> | <i>B</i>             | <i>SE</i> | <i>OR</i> | <i>p</i> |
| Sex            | 1.32            | 0.10      | 3.74      | 0.00     | 0.53              | 0.10      | 1.70      | 0.00     | -0.20           | 0.10      | 0.82      | 0.05     | 0.10                 | 0.16      | 1.11      | 0.53     |
| Age            | -1.52           | 0.11      | 0.22      | 0.00     | -1.17             | 0.11      | 0.31      | 0.00     | -0.73           | 0.11      | 0.48      | 0.00     | 0.11                 | 0.17      | 1.12      | 0.53     |
| Age of arrival | -0.52           | 0.12      | 0.59      | 0.00     | -0.23             | 0.11      | 0.79      | 0.04     | 0.10            | 0.12      | 1.11      | 0.37     | 0.17                 | 0.18      | 1.19      | 0.33     |
| ELL            | -0.51           | 0.12      | 0.60      | 0.00     | -0.23             | 0.12      | 0.79      | 0.05     | -0.16           | 0.12      | 0.85      | 0.17     | 0.16                 | 0.19      | 1.17      | 0.38     |
| SES            | 0.85            | 0.08      | 2.34      | 0.00     | 0.63              | 0.08      | 1.88      | 0.00     | 0.40            | 0.08      | 1.49      | 0.00     | 0.23                 | 0.13      | 1.26      | 0.09     |
| Economic class | 3.16            | 0.35      | 23.57     | 0.00     | 1.87              | 0.35      | 6.49      | 0.00     | 0.59            | 0.35      | 1.80      | 0.09     | -0.06                | 0.55      | 0.94      | 0.91     |
| Family Class   | 0.83            | 0.35      | 2.29      | 0.02     | 0.55              | 0.34      | 1.73      | 0.11     | -0.07           | 0.35      | 0.93      | 0.84     | -0.49                | 0.57      | 0.61      | 0.40     |
| Refugee Class  | 0.71            | 0.37      | 2.03      | 0.05     | 0.44              | 0.36      | 1.55      | 0.22     | 0.37            | 0.36      | 1.45      | 0.29     | 0.17                 | 0.54      | 1.19      | 0.75     |
| Philippines    | -1.06           | 0.29      | 0.35      | 0.00     | -0.48             | 0.29      | 0.62      | 0.09     | -0.18           | 0.29      | 0.84      | 0.52     | -0.13                | 0.45      | 0.89      | 0.77     |
| China          | 0.98            | 0.50      | 2.66      | 0.05     | 0.42              | 0.50      | 1.52      | 0.41     | 0.25            | 0.51      | 1.28      | 0.63     | 1.08                 | 0.64      | 2.94      | 0.09     |
| India          | 0.02            | 0.43      | 1.02      | 0.96     | 0.07              | 0.43      | 1.07      | 0.86     | 0.33            | 0.43      | 1.39      | 0.44     | -0.65                | 0.88      | 0.52      | 0.46     |

*Note.* Females were coded as 1 (males 0). The Low-40s group is the reference group in the analyses.

Table 2.20 *Multinomial Logistic Regression Results in Predicting Social Studies Achievement Trajectories*

|                | <u>High-80s</u> |           |           |          | <u>Steady-70s</u> |           |           |          | <u>Flat-60s</u> |           |           |          |
|----------------|-----------------|-----------|-----------|----------|-------------------|-----------|-----------|----------|-----------------|-----------|-----------|----------|
|                | <i>B</i>        | <i>SE</i> | <i>OR</i> | <i>p</i> | <i>B</i>          | <i>SE</i> | <i>OR</i> | <i>p</i> | <i>B</i>        | <i>SE</i> | <i>OR</i> | <i>p</i> |
| Sex            | 0.93            | 0.10      | 2.53      | 0.00     | 0.37              | 0.10      | 1.45      | 0.00     | -0.04           | 0.10      | 0.96      | 0.71     |
| Age            | -1.15           | 0.11      | 0.32      | 0.00     | -0.89             | 0.11      | 0.41      | 0.00     | -0.37           | 0.11      | 0.69      | 0.00     |
| Age of arrival | -0.67           | 0.11      | 0.51      | 0.00     | -0.49             | 0.11      | 0.61      | 0.00     | -0.22           | 0.11      | 0.80      | 0.06     |
| ELL            | -0.25           | 0.12      | 0.78      | 0.03     | -0.36             | 0.12      | 0.70      | 0.00     | -0.21           | 0.12      | 0.81      | 0.08     |
| SES            | 0.74            | 0.08      | 2.10      | 0.00     | 0.56              | 0.08      | 1.75      | 0.00     | 0.37            | 0.08      | 1.45      | 0.00     |
| Economic class | 3.08            | 0.35      | 21.76     | 0.00     | 2.06              | 0.35      | 7.85      | 0.00     | 1.00            | 0.36      | 2.72      | 0.00     |
| Family class   | 0.89            | 0.35      | 2.44      | 0.01     | 0.85              | 0.35      | 2.34      | 0.02     | 0.21            | 0.36      | 1.23      | 0.55     |
| Refugee class  | 0.57            | 0.34      | 1.77      | 0.10     | 0.59              | 0.34      | 1.80      | 0.08     | 0.44            | 0.34      | 1.55      | 0.20     |
| Philippines    | -0.25           | 0.32      | 0.78      | 0.43     | 0.32              | 0.32      | 1.38      | 0.31     | 0.45            | 0.32      | 1.57      | 0.16     |
| China          | 0.22            | 0.34      | 1.25      | 0.51     | -0.48             | 0.35      | 0.62      | 0.17     | -0.58           | 0.35      | 0.56      | 0.10     |
| India          | 0.17            | 0.37      | 1.19      | 0.64     | -0.02             | 0.37      | 0.98      | 0.96     | 0.04            | 0.37      | 1.04      | 0.92     |
| AgeBYcohort    | -0.12           | 0.05      | 0.89      | 0.03     | -0.13             | 0.05      | 0.89      | 0.01     | -0.13           | 0.05      | 0.88      | 0.01     |

*Note.* Females were coded as 1 (males 0). The Low-40s group is the reference group in the analyses.



Table 2.21 *Probabilities of Group Membership for the Mathematics Achievement Trajectories*

|   | High-80s | Steady-70s | Declining-70s | Flat-60s | Declining-60s | Low-40s |
|---|----------|------------|---------------|----------|---------------|---------|
| Sex – female <sup>a</sup>                 | 0.23     | 0.20       | 0.17          | 0.14     | 0.12          | 0.14    |
| Age – younger <sup>b</sup>                | 0.09     | 0.12       | 0.10          | 0.13     | 0.28          | 0.28    |
| Age – older <sup>b</sup>                  | 0.01     | 0.04       | 0.02          | 0.05     | 0.44          | 0.45    |
| Age of arrival 0-4                        | 0.15     | 0.15       | 0.16          | 0.16     | 0.16          | 0.22    |
| Age of arrival 5-9                        | 0.13     | 0.13       | 0.15          | 0.15     | 0.16          | 0.28    |
| Age of arrival 10-14                      | 0.11     | 0.11       | 0.14          | 0.14     | 0.15          | 0.36    |
| Age of arrival 15-19                      | 0.06     | 0.07       | 0.35          | 0.09     | 0.10          | 0.32    |
| ELL                                       | 0.18     | 0.12       | 0.17          | 0.14     | 0.22          | 0.18    |
| SES – low <sup>b</sup>                    | 0.22     | 0.18       | 0.19          | 0.15     | 0.16          | 0.10    |
| SES – high <sup>b</sup>                   | 0.34     | 0.17       | 0.20          | 0.12     | 0.14          | 0.03    |
| Economic class                            | 0.41     | 0.14       | 0.23          | 0.09     | 0.11          | 0.03    |
| Family class                              | 0.16     | 0.14       | 0.20          | 0.16     | 0.26          | 0.07    |
| Refugee class                             | 0.09     | 0.16       | 0.14          | 0.19     | 0.31          | 0.10    |
| Philippines-born                          | 0.08     | 0.17       | 0.22          | 0.25     | 0.12          | 0.17    |
| China-born                                | 0.30     | 0.13       | 0.14          | 0.05     | 0.15          | 0.24    |
| India-born                                | 0.15     | 0.15       | 0.17          | 0.17     | 0.16          | 0.20    |
| Assets (Female, Economic Class, High SES) | 0.66     | 0.10       | 0.17          | 0.03     | 0.04          | <0.001  |
| Risks (ELL, arrived 15-19, age older)     | 0.01     | 0.01       | 0.01          | 0.01     | 0.27          | 0.70    |

*Note.* ELL = English Language Learner, SES = Socioeconomic Status. The cells have been heat-mapped for ease of viewing, where darker shading indicates higher probabilities and lighter shading indicates lower probabilities.

<sup>a</sup>Female coded as 1 (male = 0)

<sup>b</sup>Calculated based on one standard deviation above and below the mean.

Table 2.22 *Probabilities of Group Membership for the Science Achievement Trajectories*

|   | High-80s | High-70s | Declining-70s | Flat-60s | Declining-60s | Low-40s |
|---|----------|----------|---------------|----------|---------------|---------|
| Sex – female <sup>a</sup>                       | 0.21     | 0.19     | 0.14          | 0.29     | 0.08          | 0.10    |
| Age – younger <sup>b</sup>                      | 0.09     | 0.11     | 0.13          | 0.19     | 0.18          | 0.31    |
| Age – older <sup>b</sup>                        | 0.01     | 0.02     | 0.03          | 0.39     | 0.09          | 0.46    |
| Age of arrival 0-4                              | 0.13     | 0.15     | 0.15          | 0.21     | 0.13          | 0.24    |
| Age of arrival 5-9                              | 0.10     | 0.12     | 0.12          | 0.25     | 0.09          | 0.32    |
| Age of arrival 10-14                            | 0.07     | 0.09     | 0.09          | 0.28     | 0.06          | 0.41    |
| Age of arrival 15-19                            | 0.04     | 0.07     | 0.07          | 0.29     | 0.04          | 0.49    |
| ELL   | 0.17     | 0.15     | 0.13          | 0.17     | 0.18          | 0.19    |
| SES – low <sup>b</sup>                          | 0.24     | 0.21     | 0.17          | 0.16     | 0.14          | 0.10    |
| SES – high <sup>b</sup>                         | 0.33     | 0.28     | 0.15          | 0.12     | 0.09          | 0.03    |
| Economic class                                  | 0.45     | 0.18     | 0.14          | 0.04     | 0.16          | 0.02    |
| Family class                                    | 0.34     | 0.11     | 0.14          | 0.06     | 0.28          | 0.06    |
| Refugee class                                   | 0.12     | 0.15     | 0.19          | 0.12     | 0.34          | 0.09    |
| Philippines                                     | 0.08     | 0.17     | 0.19          | 0.27     | 0.13          | 0.16    |
| China   | 0.34     | 0.17     | 0.09          | 0.12     | 0.12          | 0.17    |
| India   | 0.19     | 0.17     | 0.15          | 0.24     | 0.11          | 0.15    |
| Assets (Female,<br>Economic class, High<br>SES) | 0.74     | 0.18     | 0.05          | 0.01     | 0.02          | <0.001  |
| Risks (ELL, arrived 15-<br>19, age older)       | <0.001   | 0.01     | 0.01          | 0.31     | 0.01          | 0.67    |

*Note.* ELL = English Language Learner, SES = Socioeconomic Status. The cells have been heat-mapped for ease of viewing, where darker shading indicates higher probabilities and lighter shading indicates lower probabilities.

<sup>a</sup>Female coded as 1 (male = 0)

<sup>b</sup>Calculated based on one standard deviation above and below the mean.

Table 2.23 *Probabilities of Group Membership for the Language Arts Achievement Trajectories*

|   | High-80s | Steady-70s | Flat-60s | Declining-60s | Low-40s |
|---|----------|------------|----------|---------------|---------|
| Sex – female <sup>a</sup>                 | 0.45     | 0.20       | 0.10     | 0.13          | 0.12    |
| Age – younger <sup>b</sup>                | 0.07     | 0.10       | 0.15     | 0.36          | 0.32    |
| Age – older <sup>b</sup>                  | <0.001   | 0.01       | 0.04     | 0.55          | 0.39    |
| Age of arrival 0-4                        | 0.13     | 0.17       | 0.24     | 0.25          | 0.21    |
| Age of arrival 5-9                        | 0.06     | 0.11       | 0.40     | 0.25          | 0.18    |
| Age of arrival 10-14                      | 0.03     | 0.07       | 0.50     | 0.25          | 0.15    |
| Age of arrival 15-19                      | 0.02     | 0.05       | 0.56     | 0.25          | 0.13    |
| ELL                                       | 0.14     | 0.18       | 0.19     | 0.27          | 0.23    |
| SES – low <sup>b</sup>                    | 0.29     | 0.24       | 0.19     | 0.16          | 0.13    |
| SES – high <sup>b</sup>                   | 0.50     | 0.26       | 0.13     | 0.08          | 0.04    |
| Economic class                            | 0.70     | 0.19       | 0.05     | 0.03          | 0.03    |
| Family Class                              | 0.35     | 0.26       | 0.14     | 0.09          | 0.15    |
| Refugee Class                             | 0.28     | 0.21       | 0.20     | 0.16          | 0.14    |
| Philippines-born                          | 0.09     | 0.17       | 0.23     | 0.24          | 0.27    |
| China-born                                | 0.28     | 0.16       | 0.14     | 0.31          | 0.11    |
| India-born                                | 0.20     | 0.21       | 0.28     | 0.10          | 0.20    |
| Assets (Female, Economic class, High SES) | 0.94     | 0.06       | <0.001   | <0.001        | <0.001  |
| Risks (ELL, Arrived 15-19, age older)     | <0.001   | <0.001     | 0.03     | 0.74          | 0.23    |

*Note.* ELL = English Language Learner, SES = Socioeconomic Status. The cells have been heat-mapped for ease of viewing, where darker shading indicates higher probabilities and lighter shading indicates lower probabilities.

<sup>a</sup>Female coded as 1 (male = 0)

<sup>b</sup>Calculated based on one standard deviation above and below the mean.

Table 2.24 *Probabilities of Group Membership for the Social Studies Achievement Trajectories*

|   | High-80s | Steady-70s | Flat-60s | Low-40s |
|---|----------|------------|----------|---------|
| Sex – female <sup>a</sup>                 | 0.43     | 0.24       | 0.16     | 0.17    |
| Age – younger <sup>b</sup>                | 0.13     | 0.17       | 0.29     | 0.41    |
| Age – older <sup>b</sup>                  | 0.02     | 0.05       | 0.23     | 0.70    |
| Age of arrival 0-4                        | 0.17     | 0.21       | 0.27     | 0.34    |
| Age of arrival 5-9                        | 0.11     | 0.17       | 0.28     | 0.44    |
| Age of arrival 10-14                      | 0.07     | 0.12       | 0.28     | 0.53    |
| Age of arrival 15-19                      | 0.04     | 0.09       | 0.25     | 0.62    |
| ELL                                       | 0.24     | 0.21       | 0.25     | 0.30    |
| SES – low <sup>b</sup>                    | 0.33     | 0.28       | 0.23     | 0.16    |
| SES – high <sup>b</sup>                   | 0.49     | 0.29       | 0.16     | 0.05    |
| Economic class                            | 0.65     | 0.24       | 0.08     | 0.03    |
| Family class                              | 0.35     | 0.33       | 0.18     | 0.14    |
| Refugee class                             | <0.001   | 0.29       | 0.25     | 0.45    |
| Philippines                               | 0.16     | 0.29       | 0.33     | 0.21    |
| China                                     | 0.36     | 0.18       | 0.16     | 0.29    |
| India                                     | 0.28     | 0.23       | 0.25     | 0.24    |
| Assets (Female, Economic class, High SES) | 0.88     | 0.11       | 0.01     | <0.001  |
| Risks (ELL, Arrived 15-19, Older age)     | <0.001   | 0.01       | 0.10     | 0.89    |

*Note.* ELL = English Language Learner, SES = Socioeconomic Status. The cells have been heat-mapped for ease of viewing, where darker shading indicates higher probabilities and lighter shading indicates lower probabilities.

<sup>a</sup>Female coded as 1 (male = 0)

<sup>b</sup>Calculated based on one standard deviation above and below the mean.

**MSP-reimbursed mental health service utilization.** As can be seen in Table 2.25, sex was a significant predictor of group membership, with females having slightly higher odds of being in the Moderate and High MSP-reimbursed mental health service utilization trajectory group ( $OR_{\text{High}} = 2.20, p = .000$ ;  $OR_{\text{Moderate}} = 1.73, p = .000$ ), in comparison to the Almost None group. Age was also a significant predictor of MSP-reimbursed mental health service utilization group membership, such that older students were more likely to be in the Moderate and High categories (see Table 2.25 for odds ratios). Age of Arrival was predictive of Moderate group membership, such that younger age of arrival was associated with a greater likelihood of Moderate group membership, in comparison to Almost None group. English language learners were less likely to belong to the Moderate and High groups than the Almost None group. In

terms of migration class, economic class was associated with a decreased likelihood of belonging to the Moderate group in comparison to the Almost None group. By contrast, family class status was associated with a 2.41 and 1.79 times greater likelihood of belonging to the High and Moderate groups, respectively (see Table 2.25). With respect to country of birth, students born in China and the Philippines were less likely to belong to the Moderate group, in comparison with the Almost None group (see Table 2.25). Students designated as having special needs at school had a higher likelihood of belonging in both the High and Moderate groups, in comparison to the Almost None group ( $OR_{\text{High}} = 7.85, p = .000$ ;  $OR_{\text{Moderate}} = 3.49, p = .000$ ). SES was a significant predictor of High group membership, such that higher SES was associated with a greater likelihood of membership in the High group, in comparison to the Almost None group ( $OR_{\text{High}} = 1.23, p = .020$ ). A significant interaction (SES X Cohort) emerged as predictive of Moderate group membership, such that high SES is associated with a decreased likelihood of being in the Moderate group – and this relationship is even more marked for the foreign-born cohort. In all, the group membership probability table (Table 2.26) illustrates patterns that are largely reflective of these findings and, perhaps highlight the fact that, in many cases, there are fewer clear trends than with the academic trajectory groups. For this reason, cumulative risk or asset factors were not created as they may be misleading given the lack of clear trends illustrated by the group membership probability table.

Table 2.25 *Multinomial Logistic Regression Results in Predicting MSP-reimbursed Mental Health Service Utilization Trajectories*

|                | <u>High</u> |           |           |          | <u>Moderate</u> |           |           |          |
|----------------|-------------|-----------|-----------|----------|-----------------|-----------|-----------|----------|
|                | <i>B</i>    | <i>SE</i> | <i>OR</i> | <i>p</i> | <i>B</i>        | <i>SE</i> | <i>OR</i> | <i>p</i> |
| Sex            | 0.79        | 0.11      | 2.20      | 0.00     | 0.55            | 0.55      | 1.73      | 0.00     |
| Age            | 0.65        | 0.11      | 1.92      | 0.00     | 0.38            | 0.38      | 1.46      | 0.00     |
| Age of arrival | -0.11       | 0.11      | 0.90      | 0.29     | -0.12           | 0.05      | 0.89      | 0.01     |
| ELL            | -0.65       | 0.15      | 0.52      | 0.00     | -0.59           | 0.06      | 0.55      | 0.00     |
| SES            | 0.21        | 0.09      | 1.23      | 0.02     | -0.01           | 0.03      | 0.99      | 0.81     |
| Economic class | 0.23        | 0.27      | 1.26      | 0.41     | -0.25           | 0.12      | 0.78      | 0.04     |
| Family class   | 0.88        | 0.29      | 2.41      | 0.00     | 0.58            | 0.13      | 1.79      | 0.00     |
| Refugee class  | -0.09       | 0.53      | 0.91      | 0.87     | 0.13            | 0.18      | 1.14      | 0.46     |
| Philippines    | 0.30        | 0.33      | 1.35      | 0.35     | -0.53           | 0.18      | 0.59      | 0.00     |
| China          | 0.14        | 0.37      | 1.15      | 0.71     | -0.39           | 0.18      | 0.68      | 0.03     |
| India          | -0.53       | 0.61      | 1.70      | 0.38     | -0.30           | 0.21      | 0.74      | 0.16     |
| Special needs  | 2.06        | 0.11      | 7.85      | 0.00     | 1.25            | 0.04      | 3.49      | 0.00     |
| SESbyFB        | 0.02        | 0.06      | 1.02      | 0.77     | -0.09           | 0.03      | 0.91      | 0.00     |

*Note.* High = High MSP-reimbursed mental health service utilization group. Moderate = Moderate MSP-reimbursed mental health service utilization group. Females were coded as 1 (males 0). The Almost None group is the reference group in the analyses.

Table 2.26 *Probabilities of Group Membership for the MSP-reimbursed Mental Health Service Utilization Trajectories*

|                            | High | Moderate | Almost None |
|----------------------------|------|----------|-------------|
| Sex – Female <sup>a</sup>  | 0.45 | 0.35     | 0.20        |
| Age – younger <sup>b</sup> | 0.44 | 0.33     | 0.23        |
| Age – older <sup>b</sup>   | 0.63 | 0.28     | 0.09        |
| Age of arrival 0-4         | 0.32 | 0.32     | 0.36        |
| Age of arrival 5-9         | 0.31 | 0.31     | 0.39        |
| Age of arrival 10-14       | 0.30 | 0.29     | 0.41        |
| Age of arrival 15-19       | 0.28 | 0.27     | 0.44        |
| ELL                        | 0.25 | 0.27     | 0.48        |
| SES – low <sup>b</sup>     | 0.38 | 0.31     | 0.31        |
| SES – high <sup>b</sup>    | 0.49 | 0.25     | 0.26        |
| Economic class             | 0.41 | 0.26     | 0.33        |
| Family class               | 0.46 | 0.34     | 0.19        |
| Refugee class              | 0.30 | 0.37     | 0.33        |
| Philippines                | 0.46 | 0.20     | 0.34        |
| China                      | 0.41 | 0.24     | 0.35        |
| India                      | 0.49 | 0.22     | 0.29        |
| Special needs              | 0.64 | 0.28     | 0.08        |

*Note.* ELL = English Language Learner, SES = Socioeconomic Status, High = High MSP-reimbursed mental health service utilization group, Moderate = Moderate MSP-reimbursed mental health service utilization group, Almost None = Almost None MSP-reimbursed mental health service utilization group. The cells have been heat-mapped for ease of viewing, where darker shading indicates higher probabilities and lighter shading indicates lower probabilities.

<sup>a</sup>Female coded as 1 (male = 0)

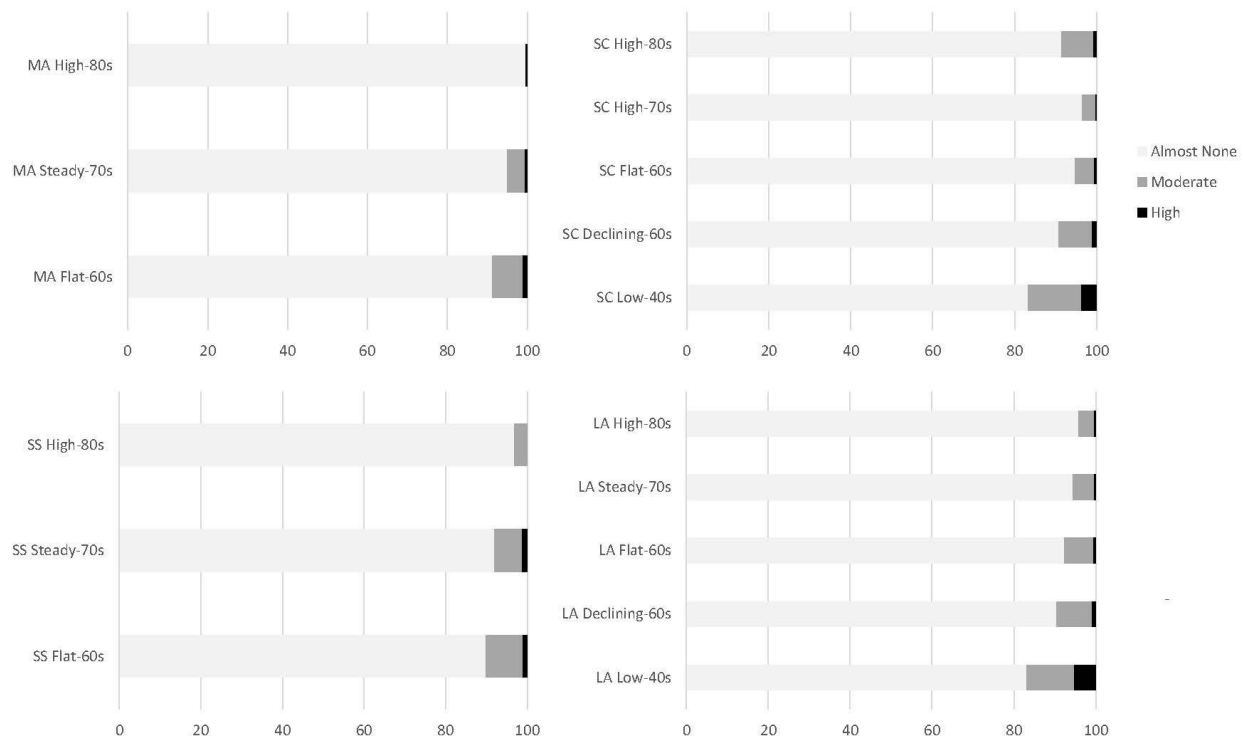
<sup>b</sup>Calculated based on one standard deviation above and below the mean.

### **Research Question 3: What is the relationship between the academic achievement trajectories and MSP-reimbursed mental health service utilization trajectories for foreign-born adolescents in British Columbia, over the course of high school?**

In order to answer the research question, four dual trajectory models were run to obtain the probability of group membership in each academic trajectory group (for math, science, language arts and social studies, respectively) conditional upon membership in the High, Moderate, and Almost None groups. Figure 2.6 illustrates the conditional probability results where each shaded bar (e.g., High-80s) represents the proportion of achievement group members

who belonged (probabilistically) to each group. Therefore, note that all bars total to 100%. For example, Figure 2.6 illustrates that belonging to the High-80s group had the highest probability of belonging to the Almost None group. This was true for all math trajectory groups and was expected because the vast majority of individuals did indeed fall into the Almost None trajectory group. The darker portions of the bars represent the probabilities of belonging to the trajectory groups characterized by higher frequencies of MSP-reimbursed mental health service utilization. Note that in the case of each achievement category (math, science, language arts and social studies), Figure 2.6 illustrates that there was a lower probability of MSP-reimbursed mental health service utilization for those in the high achievement groups. This pattern showed a relatively steady increasing trend towards the low-achievement trajectory group such that the probability of high mental health service utilization was maximized for the trajectory groups characterized by lower achievement. The only exception to this pattern was with respect to the science groups – where the High-80s group was associated with a relatively higher probability of membership in the High and Moderate MSP-reimbursed mental health service utilization groups.





*Figure 2.6.* Probabilities of belonging to each respective science, math, language arts and social studies achievement trajectory conditional upon mental health service utilization trajectory group membership. SC = Science, MA = Math, LA = Language Arts, SS = Social Studies, High = High MSP-reimbursed mental health service utilization group, Moderate = Moderate MSP-reimbursed mental health service utilization group, Almost None = Almost None MSP-reimbursed mental health service utilization group.

## 2.4 Discussion

The present study found that a higher proportion of foreign-born adolescents in the province of BC followed academic achievement trajectories characterized by high achievement in comparison to a random sample of their Canadian-born adolescent counterparts. This finding held across math, science, language arts, and social studies subjects. This finding was expected and is consistent with the notion of an immigrant paradox – adolescents who are foreign-born (i.e., first-generation) tend to have more favorable outcomes than their native-born peers

(Crosnoe & Lopez Turley, 2011). Also, foreign-born students were over-represented in the trajectory groups characterized by decline (i.e., the Declining-60s groups in math and science and the Declining-70s in math). This is some evidence of within-generation decline for those who are foreign-born, which is also consistent with the immigrant paradox – positive initial outcomes have been found to deteriorate over time spent in the host country (Garcia Coll & Marks, 2012). Importantly however, the groups which observed decline over time represented small proportions of the study population and so it must be underscored that evidence for the immigrant paradox *within*-generation was limited.

As expected, substantial variation in outcomes was observed and foreign-born students were present across the range of achievement trajectories, including those characterized by moderate and low levels of achievement. So, although foreign-born adolescents were indeed over-represented in the high achievement groups and in most of the declining groups, many those who migrate followed other paths. This diversity in findings is consistent with prior research examining the academic trajectories of foreign-born adolescents (e.g., Suarez-Orozco et al., 2010; Szalacha et al., 2005) and serves to reiterate that although many of those who migrate exhibit high academic achievement and some those who migrate exhibit declining outcomes, many follow alternative paths of low or moderate academic achievement.

The foreign-born cohort were also found in lower proportions in the Moderate and High MSP-reimbursed mental health service utilization groups, in comparison to their Canadian-born counterparts (5.9% of the foreign-born cohort versus 12.6% of the Canadian-born cohort). Interestingly, a recent estimate of the prevalence of youth experiencing mental disorders in BC was 12.6% (Waddell, Sheperd, Schwartz, & Barican, 2014). Evidently, whereas the Canadian-born cohort matches this estimate, the MSP-reimbursed mental health service utilization for the

foreign-born cohort is markedly low. A number of different explanations are possible – and unfortunately, within the confines of the present study, they cannot be verified without further research. One explanation could be that these lower rates of MSP-reimbursed mental health service utilization for the foreign-born cohort may be a reflection of less need for mental health services (i.e., the prevalence of mental health disorders may in fact be lower for this group). This is indeed consistent with the immigrant paradox and with research findings that first-generation immigrants report lower levels of emotional and behavioral problems (Georgiades, Boyle, & Fife, 2013; Beiser et al., 2002). With that said, it is important to note that although the trend toward lower MSP-reimbursed mental health service utilization for those who migrate in the present study may reflect the immigrant paradox, it is also possible that foreign-born BC adolescents are less likely to access and utilize mental health services. Given that research has shown that immigrants do face barriers to accessing health services because of lower English language proficiency (McDonald & Kennedy, 2004) and that they tend to have unease and mistrust of the system (Newbold, 2005), this is an important consideration in the interpretation of the current findings. Finally, the possibility should be noted that foreign-born adolescents who require mental health services may be accessing alternative mental health services, which are not covered by MSP (and therefore not captured in the data). Clearly, the low MSP-reimbursed mental health service utilization of those who are foreign-born warrants further investigation in order to tease apart the reason underlying the low numbers. Nevertheless, it should be noted that foreign-born adolescents were represented in all of the mental health service utilization trajectories (Almost None, Moderate, and High groups).

More generally, the diversity of academic achievement and MSP-reimbursed mental health service utilization trajectories for those who migrate lends theoretical support for the

segmented assimilation theory, which argues that conditions within a stratified and unequal host country will lead to segmented outcomes for people who migrate (see Portes & Zhou, 1993). This segmentation is ultimately thought to be impacted by certain factors associated with individual migration experiences (Portes & Rumbaut, 2001). One of the strengths of the current study is that it took into consideration the role of factors proximal to the migration experience that functioned to explain the variability in academic achievement and mental health service utilization for foreign-born adolescents in BC. The factors included as predictors of trajectory group membership in the current study (sex, age, age of arrival, English language learner status, migration class, and birth country) added considerable dimension to our understanding of the role of migration experiences on adolescent academic achievement and MSP-reimbursed mental health outcomes.

**Sex.** As expected, females were more likely to belong to the high achieving math, science, language arts and social studies groups. This is consistent with previous research focused on youth who have migrated (Fuligni, 1997; Kao & Tienda, 1995; Suarez-Orozco et al., 2009), but also with research on adolescents more generally (e.g., Arnot, David, & Weiner, 2000). For the current study, females also had a greater likelihood of belonging to the High and Moderate MSP-reimbursed mental health service utilization groups than males. The fact that females were more likely to display an increased pattern of MSP-reimbursed mental health service utilization over the high school years is not surprising, given that generally-speaking adolescent girls are at greater risk than boys for mental health problems (Galambos, Leadbeater, & Barker, 2004) and there is growing evidence that this is also the case with adolescent girls who have immigrated, at least for internalizing disorders (Sirin, Gupta, Ryce, Katsiaficas, Suarez-Orozco, Rogers-Sirin, 2013; Yeh, 2003).

**Age.** Students who were considered older for their grade were found to be at increased risk of falling into the low academic achievement groups – and to a lesser degree, this pattern was found for younger than average students. These findings point to the importance of developmental stage in the prediction of academic achievement. Eccles and colleagues (1993) point to the impact of stage-environment fit and suggest that a mismatch between the developmental stage of a student and their learning environment can lead to decreased school motivation and achievement, as well as students' self-perceptions. For youth who have migrated, the findings here replicate those of Suarez-Orozco and colleagues (2010) who found that over-aged adolescents were more likely to belong to academic trajectories characterized by low achievement.

Students who were older than average had a higher probability of belonging to the Moderate and High MSP-reimbursed mental health service utilization groups. This may be an indication that they are more likely to access MSP-reimbursed mental health services – perhaps an indication of lower barriers for older than average youth or, alternatively, it could be an indication that over-age students may have a greater need for MSP-reimbursed mental health services and that they are not only at risk for struggling academically, but also with their mental health. Importantly, larger proportions of family class and refugee class migrants were older than average: 17.3% and 19.4%, respectively, in comparison to 11.9% of the Canadian-born students. It should also be reiterated that the current study population was restricted to adolescents and does not include students over the age of 19. The proportion of those who migrate who are older than average is higher than the number indicated here. To the best of the author's knowledge, there is no research looking specifically at the stage-environment fit for those who have migrated. The findings here provide compelling evidence that there is a need for research that

specifically investigates the academic and mental health needs of those who migrate and who are older than average as they complete high school.

**Age of arrival.** Age of arrival was negatively predictive of academic achievement in the present study. As age of arrival increased, there were modest losses in the probability of membership in all academic trajectories except for the lowest achievement group. Increasing age of arrival led to greater increases in the probability of membership in the lowest achievement group (i.e., the Low-40s group). This finding fits with other relatively recent Canadian research, which found that the risk of not completing high school increases with age of arrival (after the age of 9 years; see Corack, 2011). However, it is important to note that this finding is in contrast with other research, particularly in the U.S. context, which has found that students who migrate later in their schooling perform equally as well and sometimes surpass their immigrant counterparts who arrived at younger ages (Fuligni, 1998; Rumbaut, 1997). With respect to age of arrival, the results of the current study contradict the immigrant paradox because they suggest that more time in Canada (i.e., arriving at a younger age) leads to more positive academic outcomes. As mentioned, researchers studying the immigrant paradox continue to convey the need for further research to unpack the role of age of arrival for those who migrate (for a recent example, see Marks et al., 2014).

For MSP-reimbursed mental health service utilization trajectory group membership, those who arrived at a younger age were more likely to belong to the Moderate group versus the Almost No group. While this pattern is in keeping with the immigrant paradox, it is also plausible that those who arrive at younger ages are more familiar with the Canadian healthcare system and may therefore utilize mental health services at higher levels, in a manner more similar to those who are Canadian-born.

**English language learner status.** For those who migrate to Canada, age of arrival is often closely intertwined with English language learning because the majority of foreign-born adolescents in Canada are arriving from source countries in which English is not the official language. For this reason, the importance of age of arrival in predicting achievement is inevitably linked to English language ability. In fact, in Corack's (2011) study, he found that the relationship between age of arrival and the risk of not completing high school was associated with the challenges of learning English (or French, Canada's other official language). In the current study, English language learner status was negatively associated with membership in the high achieving language arts and social studies groups and to a lesser extent this pattern was found in the math and science groups. This finding was expected and is consistent with past research which has found evidence for the importance of English language proficiency in predicting academic achievement (Munoz-Sandoval, Cummins, Alvarado, & Ruef, 1998; Suarez-Orozco et al., 2009).

The fact that the association between English language learner status and the math and science trajectory groups was less pronounced might be explained by the different linguistic demands of the language arts and social studies courses versus the math and science courses. Although achieving oral proficiency is attainable within a few years, it takes significantly more time to develop the academically oriented and nuanced language competencies needed for those who migrate to compete with their native born peers (Suarez-Orozco et al., 2010). Therefore, the current study findings may be explained by the fact that a lower level of oral proficiency may be sufficient for success in math and science but may impede high levels of achievement in language arts and social studies courses. The role of English language proficiency in academic achievement has recently been explored further by Kim & Suarez-Orozco (2015), who found that

the relationship between English language proficiency and academic achievement was mediated by relational and behavioral engagement. Taking into account the larger context of English language learner status (e.g., the extent to which students are relationally and behaviorally engaged) would help to contribute added insight into the relationship between English language learning and math, science, language arts, and social studies achievement.

Additionally, English language learner status was associated with a lower likelihood of belonging in the Moderate and High MSP-reimbursed mental health service utilization trajectory groups. This finding may be best contextualized by the fact that those with lower English proficiency have been found to be less likely to seek health services because of language barriers (McDonald & Kennedy, 2004). This is a worrisome finding because those who struggle with English may face additional social struggles (Tsai, 2006). However, as mentioned, whether this finding are the result of less need or less access cannot be concluded without further work. Nevertheless, this finding is worthy of further research that looks specifically to understand the role of English proficiency in health service provision and ways to decrease barriers to accessing mental health services for adolescents who are those who migrate.

**Socioeconomic status (SES).** High neighbourhood income decile was used as a proxy for high SES in the present study and it was found to be positively predictive of membership in the high achievement groups across subject areas (math, science, language arts, and social studies). In addition to this, SES was negatively associated with group membership in the Moderate MSP-reimbursed mental health service utilization group (in comparison to Almost No group) and this relationship was more pronounced for the foreign-born group. To add complexity to this, note that SES was positively associated with membership in the High MSP-reimbursed mental health service utilization group. As noted in the introduction, there was some expectation



that SES would not act as a strong predictor for those who are foreign-born, at least in the emotional and behavioral domains of functioning. The SES findings here did not align with this expectation as SES did emerge consistently as a predictor in all models for foreign-born and Canadian-born adolescents. Perhaps most contrary to expectations was the finding that high SES was predictive of membership in the High MSP-reimbursed mental health service utilization group. A few different explanations may be put forth to explain the finding: It may be that higher SES is in fact associated with greater access to MSP-reimbursed mental health services. It is of note that certain health services may only be partially reimbursed through MSP and partially paid by the MSP plan holder (e.g., the family). Given this, it is plausible that only those who are able to afford the partial fees associated with mental health services are able to utilize mental health services at a high frequency. However, as previously indicated, high MSP-reimbursed mental health service use may also be an indication of a greater need for mental health services. Indeed, there is growing evidence to suggest an association between affluence and certain deleterious psychological outcomes, with a certain amount of evidence pointing to high pressure to achieve as well as isolation from parents as causes (Luthar, 2003). The fact that high SES was associated with a greater likelihood of belonging to the High MSP-reimbursed mental health service utilization group is also in keeping with these findings. The role of SES in the lives of foreign-born adolescents is clearly complex and the findings here warrant further investigation.

**Migration class.** Economic class migration was found to be the most powerful predictor of membership in the high achievement academic trajectories for all subjects (math, science, language arts and social studies). The direction of this relationship was expected and might be best explained by considering the circumstances associated with economic class migration. Economic class migrants have chosen to migrate to Canada and have undergone an involved and

lengthy application process in order to do so. Economic class migrants are screened and selected based on a set of criteria designed to increase their chances of success in the Canadian labour market<sup>2</sup>. This suggests that adolescents who arrive under the economic class category are more likely to belong to families in which higher levels of education has been obtained, including professional designations and greater mastery of at least one of the official languages (English or French). Indeed, it has long been argued that the sending context is a critical component in the prediction of positive adaptation in a new country (Rumbaut, 1995), and the results of this study are consistent with this. With that said, it is important to note that although the economic class factor functioned as a strong predictor of high academic achievement, the group membership probability tables do highlight the fact that not all economic class migrants follow a similar path of academic achievement. To reiterate, this is a large group and there continues to be unaccounted for variation in the economic class migration factor. As a note of caution, it is important to remember that individuals are not the product of one factor and despite it's strength as a predictor, the economic class factor should be considered in tangent with other individual factors.

Family and refugee migration classes were both associated with higher probability of membership in all achievement trajectory groups in comparison to the lowest achievement group, although the pattern was less distinct than with the economic class. One of the main differences in findings was that family and refugee migration classes were more often associated with a greater likelihood of membership in the academic trajectory groups characterized by decline. The pattern of decline is a notable finding as it does align with the notion of an

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<sup>2</sup> Child dependants from the economic class, such as the adolescents in this study, are not screened against this criteria but are nevertheless part of a family who has met the criteria (Citizenship & Immigration Canada, 2014a).

immigrant paradox – those who migrate initially show good outcomes but over time, they show patterns of decline (Garcia Coll & Marks, 2012). This is an important finding to highlight because it provides some indication that decline is most likely to be associated with particular migration experiences.

Refugee class migrants arrive in Canada under different and usually much harsher circumstances than their economic class counterparts – they are selected for entry to Canada based upon a need for protection and are often fleeing extreme circumstances in their home countries such as extreme persecution and war (Thomas, Thomas, Nafees, & Bhugra, 2004). In contrast to their economic class counterparts, those who arrive as refugees are likely to have had little preparation or desire to move to a new country and have not been selected based upon labour market criteria (Citizenship & Immigration Canada, 2014a). Based on these differing circumstances of entry to Canada, it is not surprising that the academic achievement and mental health service utilization associated with refugee class migration differ from economic class migration. With that said, remember that refugees in the current study were in no case more likely to be in the lowest achieving groups (i.e., the Low-40s groups). Furthermore, refugee class did not increase or decrease the likelihood of belonging to the high achievement groups (i.e., the High-80s groups). This is with the exception of language arts where in fact, refugee class was associated with a greater likelihood of belonging to the highest achievement group (albeit to a lesser degree than the economic and family class groups). Given the circumstances under which refugee class adolescents migrate, it is paradoxical that refugees fared as well as they did in the current study. However, this is not the first study to find evidence of a paradoxical pattern of adaptation for refugees in the US context (see Szalacha et al., 2005). Furthermore, this does fit

with other research in the Canadian context, which has also found that the majority of refugees do relatively well in high school (Wilkinson, 2002).

Family class migration was often associated with a higher probability of group membership in the high academic achievement trajectories – similar to the economic class although to a lesser degree. However, the likelihood of belonging to the different academic trajectories was more evenly distributed and, much like refugee class, family class was often associated with a greater likelihood of membership in the declining groups (i.e., the Declining 70s and Declining-60s groups). Most notably, family class migration was associated with a higher probability of membership in the moderate and high mental health service utilization trajectory groups. Migrants who arrive in Canada under the family class category are those who are joining family members that are already citizens and established in Canada. No known prior research in Canada has focused specifically on the adolescent outcomes of those who arrive as part of the family class and as such, it is difficult to explain why it is that family class migration was characterized by more varied levels of academic achievement and higher mental health service utilization than for their economic class peers.

As previously noted, higher MSP-reimbursed mental health service utilization could reflect a greater need for mental health services or by contrast, fewer barriers to accessing MSP-reimbursed mental health services (or, a combination of the two). Family class migrants are not assessed against labour market criteria and so, unlike their economic migrant counterparts, they may be arriving into Canadian households that are characterized by less economic capital. In addition to this, family class migrants are, by definition, reuniting with family in Canada with whom which they were previously separated – and one of the challenges that family class migrants face is that this reunification may only come after long delays in the reunification

process (Social Planning Council of Ottawa, 2010). For these reasons, foreign-born adolescents who arrive in Canada under the family class may be at a different stage in their integration process than other family members and they may be dealing with the consequences of prolonged separation from their family. For all of these reasons, they may face more academic and mental health challenges than their economic class counterparts. Having said that, the higher MSP-reimbursed mental health service utilization in this group could be a product of having family who are more familiar with the Canadian mental health system and therefore, they may have less barriers to access than other migration class groups. Unfortunately, the present study was not able to disentangle this finding to understand whether higher MSP-reimbursed mental health service utilization for this group is the result of a greater need for these services or simply greater access. Much more work needs to be done to understand the specific and unique experiences of adolescents who arrive under the family class category in order to help better support their transition.

**Birth country.** The three top source countries were included as predictors in the present study (i.e., Philippines, China and India). After controlling for all other proximal migration factors included in the present study (e.g., migration class, age of arrival), birth country had a small and variable impact on the prediction of academic achievement and MSP-reimbursed mental health service utilization trajectories. That said, being born in China did result in an increased odds of belonging to the science and language arts academic trajectories characterized by the highest level of achievement (i.e., the High-80s groups). This finding is not particularly surprising – students born in China often emerge with exceptionally high academic achievement (Costigan, Hua & Su, 2010; McAndrew et al., 2009, Suarez-Orozco et al., 2010). Having said that, it should also be noted that students born in China were also less likely to be in the math

Steady-70s and Declining-60s groups (vs. the Low-40s group) indicating a concentration of individuals born in China at both ends of the academic spectrum (concentrations in the high and low achievement groups). This variable finding may be a result of the other factors taken into account in the current study. For example, note that the high achievement of foreign-born adolescents of Chinese descent has been explained by the fact that students from China have a greater number of resources at their disposal than students from other countries (Suarez-Orozco et al., 2010). Similarly, others have found that students from Asia, in general, had more socioeconomic resources such as parental education (Crosnoe & Lopez Turley, 2011).

Underlying factors, such as greater resources, that are often used to explain the success of those who migrate were likely accounted for in other ways in the current study. For example, one of the unique predictors accounted for in the current study was migration class. Students who are born in China were most likely to belong to the economic class of migrants and as we have seen, being an economic class migrant was the most powerful predictor of group membership in the high achievement trajectories. In contextualizing the current study findings, it is important to keep in mind that each risk factor was not present in isolation. Indeed, those born in China did very well on average in the present study – however most importantly, this was only partially associated with *where* they arrived from and more likely associated with *how* they arrived (i.e., the circumstances of migration).

Being born in the Philippines was not predictive of either academic achievement or MSP-reimbursed mental health service utilization trajectory group membership. In Canada, the Philippines is currently the number one source country for those who immigrate (Citizenship & Immigration Canada, 2014a). It is such a large group that migration circumstances and experiences also vary, with those who migrate from the Philippines represented in all three

migration groups: economic class, family class, and in some cases the refugee class. This lends support to the idea that those born in the Philippines may have very different backgrounds as well as migration experiences. The strength of the current study then, is in understanding the other factors that might act as assets or risks in the migration experiences of those who migrate who were born in the Philippines, and strongly suggests that we cannot treat those who migrate from the Philippines in a homogenous fashion. Nevertheless, there is a notable absence of research on adolescents who migrate from the Philippines. Future research needs to place a lens on those who migrate from the Philippines in order to gain a greater understanding of their unique migration experiences.

Perhaps most striking was the limited predictive utility in birth country overall. Being born in India was not predictive of academic achievement or MSP-reimbursed mental health service utilization trajectory group membership. Taken with the findings associated with being born in the Philippines and China, the results of the present study highlight the importance of being cautious in grouping those who migrate based on birth country. In fact, the study findings provide evidence for the need to move past studies that are largely focused on comparing outcomes based upon country of birth or racial/ethnic groupings. The results of the present study serve to indicate that there are many other dimensions required to develop our understanding of the variation in outcomes associated with migration experiences and considering birth country, in and of itself, may be misleading and may be attenuating important within-group differences.

**Cumulative risks and assets.** In contextualizing the current study findings, it is important to keep in mind that each factor accounted for in the study does not function in isolation. Rather, factors combine in ways that form more accurate representations of individual achievement and MSP-reimbursed mental health service utilization. For this reason, the present

study created two composite factors in the case of each group of academic trajectories to understand the impact of holding multiple assets and another for multiple risks. As expected, the cumulative factors proved to be powerful predictors of trajectory group membership. The findings of the present study suggest that if you are female, an economic class migrant and live in a neighborhood characterized by high socioeconomic status, you have a 66% and 74% chance of being in the highest math and science achievement group trajectories, respectively. These same characteristics also translate into an astounding 94% and 88% probability of following the highest language arts and social studies trajectories. By contrast, this cluster of characteristics translated into virtually no chance of falling into the lowest achievement trajectory groups.

For the cumulative risk variable, the risk factors of ELL status, arrived in Canada between 15-19, and being older than average for your grade were used. This cluster of risk factors had an equally strong predictive role as the cumulative asset factor, but in the opposite direction. More specifically, the results of the cumulative risk factor suggest that having ELL status, arriving in Canada between the age of 15 and 19, and being older than average for your grade was associated with virtually no chance of belonging to the highest achievement trajectory groups for math, science, language arts, and social studies.

These findings are in keeping with the concept of cumulative risk – that exposure to multiple risk factors predicts more severe detrimental outcomes and that risk factors tend to cluster together (Evans, Li, & Whipple, 2013; Rutter, 1979). A strength of the current study is that cumulative assets were explored in addition to cumulative risks. Very little work has done this, and it is important to note that the cumulative assets factor was equally as predictive as cumulative risk, but in the opposite direction. Both factors are important for understanding the range of experiences and circumstances that can face foreign-born adolescents in BC.



### **MSP-reimbursed mental health service utilization and academic achievement.**

Overall, the study demonstrated that membership in the high achievement trajectories was associated with an increased probability of membership in the Almost None MSP-reimbursed mental health service utilization trajectories for foreign-born adolescents. As noted above, and to reiterate here, MSP-reimbursed mental health service utilization cannot be equated with mental health without having a greater understanding of what underlies mental health service utilization for foreign-born adolescents. It could be that the negative association between MSP-reimbursed mental health service utilization and academic achievement is an indication that high functioning in the academic achievement domain is associated with high functioning in the mental health domain and therefore lower mental health service utilization. However, it could also be the case that foreign-born high academic achievers are less likely to access mental health services for other reasons (e.g., they are less likely to seek help for mental health concerns). Indeed, adolescents who are struggling psychologically often do so internally and may show no outwards signs (Luthar, Doernberger, & Zigler, 1993; Luthar & Zelazo, 2003). In addition to these two proposed explanations, there is also the possibility that those who are higher academic achievers are less likely to utilize MSP-reimbursed mental health services – and may be utilizing other mental health services not reimbursed by MSP. A more complex relationship between academic achievement and MSP-reimbursed mental health service utilization is likely to be revealed in the presence of additional information, including separate indicators of mental health status.

#### **2.4.1 Study Strengths, Limitations and Future Directions**

To our knowledge, the study is the first longitudinal, population-based study that maps academic achievement and MSP-reimbursed mental health service utilization trajectories over the course of high school for foreign-born adolescents in BC. This is an inherent strength in the

study as it provides a comprehensive picture of the adaptation of adolescents who are foreign-born and most importantly, what impacts this adaptation. However, it is important to note that the study excluded those who are foreign-born and on the fringe of adolescence (i.e., emerging adults). As previously discussed, the results in the present study would suggest that this group may be particularly vulnerable at an intersection in life that tends to be marked by other life transitions such as employment, living arrangements, and often relationships (Arnett, 2000). Future work in this area is warranted.

It is also important to highlight that it was not possible to distinguish second-generation immigrants in the present study (i.e., those who are born in Canada and have at least one parent who is foreign-born). Second-generation immigrants have been identified as a distinct group with their own unique experiences and needs (Portes & Rumbaut, 2001). Distinguishing second-generation immigrants from third-plus generation immigrants would have provided a rich additional dimension to the findings but this was unfortunately not feasible in the present study. As an example, many studies have reported that while first-generation (i.e., foreign-born) immigrants have more positive outcomes than second-generation immigrants. Second-generation immigrants often have better outcomes than the third-plus generation groups (Marks et al., 2014). With this in mind, it is possible that differences in the foreign-born (first-generation) and Canadian-born (second- and third-plus generation) cohorts in the current study are attenuated to some degree. Future research that is able to account for more refined generational categories would help to determine if this is indeed the case.

The study offers a unique account of the relationship between academic achievement and MSP-reimbursed mental health service utilization over time for foreign-born adolescents in BC. With that said, the findings inspired many more research questions regarding the relationship

between the mental health and mental health service utilization of foreign-born adolescents. For example, our understanding would be enhanced by research that captures a range of mental health indicators, which may include researcher-collected data such as self-reported mental health status in conjunction with measures of mental health service utilization. Obtaining indicators of mental health (via methods such as researcher-collected or self-report) in addition to measuring the utilization of mental health services would allow for a greater insight into whether those who are foreign-born are not utilizing mental health services because they face barriers to access (e.g., cultural, systemic) or whether they do not require them. Unfortunately, it was not possible to capture this distinction in the present study, which is an important study limitation. Indeed, more research is needed that captures a greater range of mental health indicators in order to gain a clearer, more holistic picture of the true mental health status of foreign-born adolescents in BC and indeed Canada, more broadly.

#### **2.4.2 Conclusion**

The present study provides additional support for the idea that migration, in and of itself, should not be considered as a risk or an asset during adolescence. As illustrated, removing valence from migration leaves room to understand the impact of the factors that underlie migration experiences (i.e., those that are proximal to migration) to ultimately understand what leads to positive adaptation for young people who migrate and conversely, what leads to negative patterns of adaptation. This study provides evidence for this by identifying that some factors associated with migration experiences function as assets (e.g., arriving as an economic class migrant); whereas factors associated with other migration experiences act as risks (e.g., being an English language learner). Indeed, researchers are starting to call for studies that take into account the unique strengths in addition to the risks in order to properly unpack the immigrant

paradox (Marks et al., 2014), and this is one of the strengths of the current study. Importantly, it should be emphasized that the risks and assets investigated in the current study co-exist in individuals and no single factor associated with migration acts alone. Moreover, individuals can be challenged by multiple risks or they can be benefitted by multiple assets. As illustrated by the cumulative risk and asset variables examined in the current study, the combination of risks and assets experienced by individuals can lead to powerful and contrasting migration outcomes.

Placing a specific lens on the unique factors (and combination of factors) has important practical implications and the results of the present study provide guidance in this regard. Admittedly, the risks and assets in the present study are generally not alterable – we cannot readily change where a person was born, their gender, or their pre-migration circumstances. Whereas these factors cannot be changed, the response of the host country can be orchestrated in a manner that truly optimizes the positive, well-rounded adaptation of those who are new to the country. Currently, settlement support is largely directed at the whole. In contrast, acknowledging the nuances and gaining a greater understanding of who will struggle and who will thrive is likely to yield the greatest rewards for foreign-born adolescents and the countries in which they settle. Chapter 4 will outline in greater detail the implications and some recommendations based upon the results presented here.

## **Chapter 3: Assets and Risks in the Academic Achievement and Psychological Well-being of Adolescents who are new to British Columbia, Canada**

### **3.1 Introduction**

Building upon the work presented in Study 1, Study 2 employed a cross-sectional design based upon a researcher-collected sample of foreign-born adolescents in BC with the intention of deepening our understanding of the factors associated with adaptation in the context of British Columbia, Canada. Recall from the Introduction (Chapter 1) that foreign-born adolescents face a number of challenges as they strive to adapt in a new country – some are common regardless of age or developmental stage, such as the stress associated with learning a new language and navigating a new culture (Berry, 2006, Hernandez, 2009); experiences of racism and discrimination (Suarez-Orozco & Suarez-Orozco, 2001); and lowered economic and social capital (Beiser, Hou, Hyman & Tousignant, 2002; Hernandez, 2004). Other challenges are particularly salient for foreign-born adolescents such as navigating an unfamiliar school system (Garcia Coll & Marks, 2009) and rebuilding social networks at a time when peers and friendships are central to their lives (Tsai, 2006). Theoretically and intuitively, we would expect that such adversity would lead foreign-born adolescents to initially struggle and, as they gain footing in their new country, show increasingly positive signs of adaptation (often termed, a *straight-line* or *assimilation* pattern of adaptation; Gordon, 1964; Sam, et al., 2008). As already discussed, this pattern of adaptation is increasingly contested, as a growing body of research supports a more complicated pattern of adaptation in which those who migrate are displaying varied outcomes and in many cases, patterns that are in direct opposition to a straight-line or assimilation notion of adaptation (Rumbaut, 1997). Some researchers have labeled this

unexpected pattern of findings as the *immigrant paradox* (Crosnoe & Lopez Turley, 2011; Garcia Coll & Marks, 2009).

To reiterate, these findings have been described as paradoxical because there are many reports that young people who migrate are achieving a level of academic success that is on par with and oftentimes better than their non-immigrant counterparts as illustrated in numerous studies in both the U.S. (Fuligni, 1997; Garcia Coll & Marks, 2009; Kao & Tienda, 1995) and in Canada (McAndrew et al., 2009). There is also evidence in other domains of functioning to indicate that young people who migrate tend to engage in fewer risky behaviours such as delinquency, incarceration, and substance abuse, and they are generally physically healthier (Chen, Ng & Wilkins, 1996; Garcia Coll & Marks, 2009; McDonald & Kennedy, 2004). Indeed, these findings paint a picture of prosperity for those who migrate as a whole; however, as highlighted in the previous chapters, there is a greater complexity underlying these findings that should not be overlooked. For example, longitudinal work has shown that the initial positive adaptation outcomes tend to disappear over time (e.g., Hernandez & Charney, 1998; Suarez-Orozco & Suarez-Orozco, 1995). Moreover, while an overarching pattern of success may prevail, researchers generally purport that the findings are far from uniform (Fuligni, 1997; Kao & Tienda, 1995; McAndrew et al., 2009; Portes & Rumbaut, 2001). The body of literature as a whole is criticized for its tendency to treat migration as a uni-dimensional experience because in doing so, we may be masking important within-group differences in migration (Schwartz, Unger, Zamboanga, & Szapocnik, 2010; Suarez-Orozco & Carhill, 2008). Additionally, there is an increasing awareness of the importance of considering multiple domains of functioning (O'Dougherty-Wright & Masten, 2005). While academic achievement is an undeniably important indicator of positive adaptation for foreign-born adolescents, there is mounting

evidence to suggest that it should not be considered alone as a gauge for positive adaptation because academic achievement does not necessarily correspond with other aspects of healthy functioning such as psychological well-being (Kaufman et al., 1994; Li, 2009; Qin, Way, & Mukherjee, 2008; Zhou, Peverly, Xin, Huang, & Wang, 2003).

Indeed, we expect adolescents who migrate to display within-group and within-person variation in their adaptation outcomes within and across domains of functioning. Some of those who migrate will have more negative adaptation outcomes however, many those who migrate demonstrate more favourable outcomes than their native-born peers (Garcia Coll & Marks, 2009). Treating migration (in and of itself) as a risk is, at worst, inaccurate, and at best, not helpful in understanding the particular reasons *why*. Ultimately, if we are to improve the likelihood of positive adaptation for young people who migrate, it is imperative to shift the focus away from overarching trends to finding ways to explain the underlying variations. As previously discussed in Chapter 1 and 2, one of the ways we might do this is by removing the valence associated with migration. Then, the focus can be alternatively placed on identifying the specific assets and risks, proximal to the adaptation experiences of foreign-born adolescents that lead to positive as well as negative adaptation outcomes. A risk factor is generally considered to be indicated by an increased probability of some negative outcome (Masten, 2001; O'Dougherty-Wright & Masten, 2005). Conversely, an asset is a factor associated with better outcomes (Masten, 2001). In keeping with this, it was the aim of the present study to explain the variations in positive adaptation (both academic and psychological) of foreign-born adolescents in BC by identifying specific factors that may act as assets and risks.

Broadly speaking, we know that characteristics of a child, their relationships and attachments, as well as their cultural and community contexts are foundational to healthy

development and positive adaptation (Masten, 2001; Masten & Motti-Stefanidi, 2009). Indeed, having a deeper understanding of the underlying factors associated with these adaptive systems is of upmost importance for supporting the positive adaptation of new adolescent Canadians. Understanding the factors that play a role in the positive academic and psychological development of young people who migrate means having the ability to mobilize and nurture these factors – to promote positive outcomes and even prevent deleterious outcomes. But, as Masten has argued herself, there are variations in the processes of human adaptation that must be uniquely understood (Masten, 2009). Particularly in the case of minority groups, such as young people who migrate, researchers have highlighted a distinct lack of studies that focus on more subtle intra-group processes and variability (Garcia Coll et al., 1996). Today this argument still stands and researchers continue to emphasize our lack of knowledge about what uniquely promotes positive adaptation for particular minority groups, such as groups of young people who migrate (Reitz, Motti-Stefanidi, & Assendorpf, 2014; Zhou et al., 2012).

In an effort to refine our understanding of the variations in adaptation, Luthar and colleagues (2000) have argued for the importance of utilizing relevant theoretical frameworks in order to identify factors that apply to the specific groups under study, rather than more general theoretical frameworks. For this reason, the present study remained focused on factors that are fundamental to adaptation (i.e., child characteristics, relationships and attachments, and cultural or community context) but turned to both theory and research in refining the list of specific factors that may uniquely impact the positive adaptation of young people who migrate, within those broad categories. As discussed in detail in Chapter 1, the *integrative model for the study of developmental competencies in minority children* (Garcia Coll et al., 1996) provides helpful and relevant guidance in this regard. Garcia Coll and colleagues (1996) specify eight pertinent



constructs for studying the development of minority youth: Social position (e.g., gender and ethnic background), racism, discrimination, and segregation (e.g., residential and psychological), child characteristics (e.g., age and temperament), adaptive culture (e.g., traditions and legacies; values and attitudes), promoting/inhibiting environments (e.g., schools), family values (e.g., family structure and roles), and developmental competencies (e.g., cognitive, academic, social and emotional; Garcia Coll et al., 1996). These constructs provide further direction in identifying the most salient factors that may impact the positive adaptation of young minorities such as those who migrate, but they still require further refinement based on the literature to locate the specific factors that are most likely to be predictive of the academic achievement and psychological well-being of foreign-born adolescents to Canada. Drawing from Garcia-Coll and colleagues' model, the current study focused in on three pertinent groups of adaptation factors associated with academic attitudes, cultural orientation, and social support – all of which were anchored by factors of social position and are described below.

Factors of social position were placed at the foundation of the present study, in keeping with Garcia Coll and colleagues' estimation that factors associated with systems of social stratification (e.g., gender, age, and racial/ethnic background) should be embedded in a model and not simply studied at the periphery (Garcia Coll et al., 1996). *Adaptive culture*, defined as the specific goals, values, attitudes, and behaviours that are thought to be developed by minority groups in response to systems of social stratification, were accounted for in two specific ways for foreign-born adolescents. First, the present study considered the role of academic attitudes as a salient form of adaptive culture. Foreign-born adolescents and their parents tend to place a high value on academic success because it is seen as a critical strategy for adapting in a new country; specific attitudes and behaviors associated with this academic achievement are thought to be

fostered to help yield this success (Fuligni, 1997; 1998). Second, cultural orientation is another aspect of adaptive culture that is especially salient for foreign-born adolescents and as such was accounted for in the present study. Having made the transition from one country to another, foreign-born adolescents are in the position of navigating multiple cultures, and the ways in which they interact with their heritage and mainstream cultures are thought to be critical for ensuring positive adaptation (Garcia Coll, 2009; Suarez-Orozco & Suarez-Orozco, 2001). Essential to a study of culture is discrimination and for foreign-born adolescents, this is a factor likely to impact ones' relationship with both mainstream and heritage cultures (Szalacha, Erkut, Garcia Coll, Fields, Alarcon, & Ceder, 2003).

Finally, factors of social support were captured in the present study with an eye to the promoting/inhibiting environments construct emphasized by Garcia-Coll and colleagues (1996). Promoting/inhibiting environments are considered as highly relevant in understanding the development of minority youth. It is argued that minority youth may be differentially impacted by their environments and as such have different needs than their non-minority counterparts. For foreign-born adolescents, the particular environments within which they may find themselves and the extent to which they feel supported are likely to promote or inhibit their positive adaptation (Simich, Beiser, Stewart, & Mwakarimba, 2005; Szalacha et al., 2003; Wong, Eccles, and Samerokff, 2003). Aside from the family context, a particularly salient environment for any adolescent newcomer will be the school (Han, 2008). A sense of belonging at school and specific social support in the school environment have previously been found to play an important role in the lives of foreign-born adolescents (Gagné, Shapka, Law, 2012; Ryan, 1995). The current study considered family social support as well as social support at school.

To summarize, the present study focused on three groups of factors chosen to help better understand the unique adaptation needs of young people who migrate to BC: *academic attitudes*, *cultural orientation*, and *social support*. Academic attitudes included academic self-efficacy, academic behavioural investment, academic self-expectation stress, academic parent-expectation stress, and mastery-approach, mastery-avoidance, performance-approach, performance avoidance goal orientations in explaining the positive adaptation of foreign-born adolescents. Cultural orientation considered factors of heritage culture maintenance, mainstream culture participation, and the interaction between the heritage and mainstream culture factors (i.e., biculturalism), while also accounting for perceived racial/ethnic discrimination. Social support accounted for promoting/inhibiting environments of the school and home by way of the following factors: school belonging, teacher support, peer support, and family support. Of note, systems of social stratification are thought to undergird and shape all other factors in the development of young minorities (Garcia Coll et al., 1996). For this reason, the roles of social position factors (age, gender, racial/ethnic background) were taken into consideration in all analysis as factors that could act directly or indirectly as moderators in predicting the academic achievement and psychological well-being of foreign-born adolescents to BC.

To reiterate, it was the objective of the current study to investigate the factors (both assets and risks) associated with the academic achievement (English and math grades) and psychological well-being (satisfaction with life and depressive symptoms) of foreign-born adolescents in BC with a focus on three overarching groups of adaptation factors, (a) academic attitudes, (b) cultural orientation, and (c) social support. The study had three research questions: (1) Do the factors associated with academic attitudes act as assets or risks in the academic achievement and psychological well-being for foreign-born adolescents in BC, taking into

account age, gender, and racial/ethnic background? (2) To what extent do the factors associated with cultural orientation act as assets or risks in the academic achievement and psychological well-being for foreign-born adolescents in BC, taking into account age, gender, and racial/ethnic background? (3) To what extent do the factors associated with social support act as assets or risks in the academic achievement and psychological well-being for foreign-born adolescents in BC, taking into account age, gender, and racial/ethnic background?

This work builds upon Study 1, which described the role (as assets or risks) of factors proximal to the migration experience that predict academic achievement and MSP-reimbursed mental health service utilization. Study 2 contributes to these findings by expanding our understanding of the factors (assets and risks) associated with adaptation that may contribute to the academic achievement and psychological well-being for a sample of foreign-born adolescents in BC. Note that the current study captured self-reported psychological well-being – in contrast to Study 1, which approached well-being from the perspective of mental health service utilization.

### **3.1.1 Academic Achievement**

Extending from the discussion in Chapter 1, note that one of the primary ways children feel they can contribute to their families is by doing well academically (Caplan, Choy, & Whitmore, 1991; Fuligni, 1998). Indeed, newcomer students on average spend significantly more time on school work, are less likely to drop out of school, and tend to work harder (Fuligni, 1998; Garcia Coll & Marks, 2009; Kao & Tienda, 1995; Portes & Rumbaut, 2001). Education is overwhelmingly seen as the key to success by those who immigrate and their behavioural investments and attitudes toward school tend to reflect these values (Fuligni, 1997). For example, a number of studies have powerfully illustrated the great lengths immigrant students will go to

obtain academic success, including long hours of studying and actively seeking extra help (Caplan et al., 1991; Fuligni, 1997).

Consistent with the findings of Study 1, immigrant youth tend to exhibit patterns of academic achievement that are initially above and beyond what would typically be expected, given the challenges they may face (Fuligni, 1997; Garcia Coll & Marks, 2009; Kao & Tienda, 1995; McAndrew et al., 2009; Portes & Rumbaut, 1996). Both first and second generation immigrants tend to receive grades in mathematics and English that are on par with, and in some studies, significantly higher than their native-born peers (Caplan et al., 1991; Fuligni, 1997; Kao & Tienda, 1995). This finding has been found most consistently in the case of young immigrants from China (although note that Study 1 found more complexity to this pattern). Nevertheless, those of Chinese descent are quickly gaining a reputation for “Chinese Exceptionalism,” a term that has been used to refer to the remarkably high levels of academic achievement typically found for this group (Suarez-Orozco et al., 2010, p. 614). This pattern of high achievement has been noted in Canadian and U.S. studies (e.g., McAndrew, 2009; Portes & Rumbaut, 2001; Samuel, Krugly-Smolka, & Warren, 2001; Suarez-Orozco et al., 2009; Xu, Connelly, He, & Phillion, 2007). A review of the literature by Costigan, Hua and Su (2010) revealed that students of Chinese descent across North America achieve higher grades and GPAs, study for longer, and have a higher rate of university attendance, in comparison to their peers of other ethnic backgrounds. Potentially eclipsed by the academic excellence of some, it is important to maintain that many can struggle to succeed (Gandera & Contreras, 2008) and there is a significant amount of variety in the academic achievement of young people who migrate that cannot be discounted (Suarez-Orozco et al., 2010). Of particular importance in the present study was to investigate further the factors (associated with academic attitudes, biculturalism, and

social support) that help to distinguish those who succeed academically versus those who struggle (see Chapter 1 and 2 for further discussion on the academic achievement outcomes of foreign-born adolescents).

### **3.1.2 Psychological Well-being**

Although there is evidence for academic success in young people who migrate, the research is equivocal regarding the social and emotional well-being of immigrant youth (Fuligni, 1998; Takeuchi, Hong, Gile, & Alegria, 2007). Some research has shown that adolescents who immigrate experience fewer psychosomatic problems and less psychological distress than nonimmigrants (Harris, 1999). Specifically, in terms of depression, there is some indication that those who migrate are less apt to be depressed (Ali, 2002). However, the findings are not uniform and other work has shown that there are no differences in mental health across generation status. For example, Kao (1999) found that immigration status was not related to self-esteem or positive psychological well-being. However, other work has found that immigrants tend to be less well off in terms of their mental health than their non-immigrant counterparts. For instance, it has been found that young immigrants tend to perceive less control over their lives and feel less popular than their native-born peers (Chiu, Feldman, & Rosenthal, 1992; Kao, 1999). In addition to this, there is evidence showing that young people who migrate of Asian descent experience significant amounts of emotional stress as a result of perceived parental and cultural pressure to succeed academically (Li, 2009; Samuel, Krugly-Smlaska, & Warren, 2001; Zhou et al., 2003). For students of East Asian descent in particular, some adolescents report high levels of peer discrimination and harassment (Rosenbloom & Way, 2004; Qin, Way, & Rana, 2008) and this ethnic/race-based peer discrimination and harassment is associated with symptoms of poor psychological adjustment, such as depression and low self-esteem (e.g.,

Alvarez & Helms, 2001; Green et al., 2006; Rivas-Drake, Hughes, & Way, 2008). Given this evidence, it stands to reason that we cannot assume academic achievement equates to social and emotional adaptation. In fact, given the findings presented here, academic achievement may be associated with *lower* social and emotional well-being, at least for some immigrant youth. As a result, it was imperative in the current study to account for psychological well-being in addition to academic achievement and furthermore, the present study was aimed at delineating factors associated with psychological well-being in an effort to unpack some of the findings in the literature.

### **3.1.3 Academic Attitudes**

In general, attitudes are thought to play an important role in the adaptation of those who migrate. For example, some theorists espouse the concept of immigrant optimism, the idea that those who migrate develop a subset of attitudes and values that foster the behaviours necessary for successful adaptation (Kao & Tienda, 1995). Other researchers have suggested that it is the potential for opportunity that a new country brings that facilitates optimism and success and people who migrate are a self-selected group of individuals who are motivated to obtain a brighter future (Leventhal et al., 2006). That being said, young people who migrate (children and adolescents) often arrive in Canada with their parents and as such, were not necessarily involved in migration decisions and may not have the same sense of optimism. Nevertheless, there is consistent evidence to indicate that the vast majority of young people who migrate enter school with positive attitudes towards school and academics (Fuligni, 1997; Kao & Tienda, 1995; Portes & Zhou, 1993; Suarez-Orozco & Suarez-Orozco, 1995; 2001). The current study examined a number of specific factors associated with academic attitudes to help explain academic achievement and psychological well-being, namely, academic self-efficacy, academic

behavioural investment, academic expectations, academic expectations stress, and achievement goal-orientation. Each is described below.

**Academic self-efficacy.** Based on Bandura's self-efficacy theory, academic self-efficacy is the belief in one's ability to be successful in academic tasks or schoolwork (Pajares, 1996). Indeed, students who believe they can succeed and expect success are more likely to perform well (Wigfield & Cambria, 2010). Underpinning this notion is the idea that individuals' perceptions about self-efficacy determine their actions and the resulting knowledge and skills they gain (Bandura, 1997). In keeping with the broader notion of self-efficacy, academic self-efficacy has been found to act as a positive predictor of academic achievement (Pajares, 1996). The role of academic self-efficacy in predicting psychological well-being is less obvious, however, there is solid theoretical and empirical evidence to indicate that self-efficacy protects against depression and promotes well-being (Bandura, 1997). The current study explored this relationship.

**Academic behavioural investment.** As noted previously, education is overwhelmingly seen as the key to success by those who migrate (Fuligni, 1997). Their behavioural investments and attitudes toward school tend to match this value; they are less likely to drop out of school and they also tend to work harder (Garcia Coll & Marks, 2009; Kao & Tienda, 1995; Portes & Rumbaut, 2001). For example, a number of ethnographic studies have powerfully illustrated the great lengths immigrant students will go to for academic success, including long hours of studying and actively seeking extra help (Caplan et al., 1991; Fuligni, 1997). In fact, Rumbaut (1997) found that even though students who migrate receive grades that are on par or higher than their non-immigrant peers, they tend to score lower on standardized tests, which indicates that an



element of effort and attitude is at play in explaining the academic achievement of young people who migrate.

**Academic expectations.** Well-documented in the literature, is the profound sense of responsibility and obligation that young people who migrate often feel toward their families, stemming in part from the knowledge of the sacrifice made by their parents to bring them to the new country (Fuligni, 2001a; Yoo & Kim, 2010). One of the primary ways children feel they can contribute to their family obligations is by doing well academically in order to carve out a brighter future (Caplan et al., 1991; Fuligni, 2001a). This often can translate into high expectations to excel from their parents, their teachers, and themselves (Ang, Klassen, Chong, Huan, Wong, Yeo, & Krawchuk, 2009). Generally speaking, these expectations are positively associated with high academic success (Rumberger, 1995; Trusty, 2000) however, emerging in the literature is evidence that these high expectations can also be associated with more deleterious mental health concerns, such as high levels of stress (Ang et al., 2009). As noted earlier, this pattern seems to be particularly pronounced for foreign-born youth of Asian descent and notably, is nearly nonexistent for nonimmigrants, particularly those of Anglo-Saxon or European descent (Akgun & Ciarrochi, 2003; Ang et al., 2009).

**Achievement goal-orientation.** Achievement goal orientations are most often depicted in two dimensions. The first dimension, distinguishes between mastery- and performance-orientations, which pertains to the standard of competency one strives to attain (Elliot & Murayama, 2008). A mastery-oriented individual places the focus of competency on learning, while an individual who is performance-oriented focuses on the performance or display of the competency. The second dimension captures the valence of goal achievement, from positioning

oneself to approach success (i.e., approach-orientation) in comparison to placing an emphasis on the avoidance of failure (i.e., avoidance-orientation; Elliot & Murayama, 2008).

Notably, a mastery-approach achievement goal orientation is the one goal orientation most often associated with academic achievement and life satisfaction (Diseth, Danielson, & Samdal, 2012). In the consideration of achievement outcomes for young people who migrate, culture may play a key role in helping to understand the underpinning of achievement motivations. There is some evidence to indicate that children from western origins are more likely to believe that academic success stems from *ability*, whereas students of Asian descent more often cite *effort* as the primary cause of achievement (e.g., Walkins & Biggs, 1996). This is not surprising given the Confucian philosophies that often underlie Asian cultures (Li, Holloway, Bempechat, & Loh, 2008). The model of learning that underpins Confucianism espouses virtues such as determination, diligence, perseverance, and mastery. In addition, these values are thought to be within everyone's grasp and control (Li et al., 2008). These Confucian values align closely with our modern understanding of mastery (i.e., placing the focus on learning rather than performing) and approach (i.e., placing the focus on success rather than failure) achievement orientation.

There is less agreement amongst researchers with respect to a performance-approach orientation (Senko, Hulleman & Harackiewicz, 2011). While many researchers contend that it should not be considered a positive achievement-orientation to have, there is certainly evidence to indicate that a performance-approach orientation can be associated with high academic performance (Elliot & Murayama, 2008; Senko et al., 2011; Wigfield & Cambria, 2010). Certainly, there is evidence to indicate a shift towards performance orientations during adolescence, by students themselves but also by schools (Anderman & Anderman, 1999). For

this reason, it is an orientation that would benefit from further investigation, particularly to consider its impact on broader domains of functioning, such as psychological well-being.

Avoidance approaches, in particular performance-avoidance have yielded much more consistent research findings and is much less contested. This orientation tends to be associated with a whole host of negative learning habits as well as negative achievement outcomes (Senko et al., 2011).

To summarize, it was expected in the current study that those who migrate would have a number of academic attitude factors at their disposal which would act as assets to predict academic achievement and psychological well-being. It was expected that academic self-efficacy, academic behavioral investment, high academic expectations, and a mastery-approach orientation would be assets for academic achievement for foreign-born adolescents. It was also expected that those who migrate of Asian descent, as a group, would possess the most optimal achievement goal orientations of all racial/ethnic groups, which was expected to contribute to high levels of academic achievement. It was hypothesized that students' academic attitudes would be less uniform in their association with psychological well-being. For example, it was expected that academic expectations may contribute to a significant amount of stress and that this, in turn, would translate to lower global indicators of psychological well-being. However, students who report a mastery-approach goal orientation were expected to report higher psychological well-being.

#### **3.1.4 Cultural Orientation**

One of the primary tasks facing young people who migrate upon arrival in a new country is learning how to adapt to a new culture (Berry, 2006; Hernandez, 2009). *Acculturation*, or the process of adapting to a new culture as a result of continuous contact with individuals of a

different cultural origin, has been a construct of interest to researchers for decades (e.g., Redfield, Linton, & Herskovits, 1936). In contrast to acculturation, note that *enculturation*, which is the process of maintaining one's heritage culture, is of equal importance for those who migrate (Zhang & Tsai, 2014). It has been hypothesized that possessing the ability to juggle two cultures or languages can be developmentally beneficial and may even help to explain why immigration status seems to act as an initial protective factor for young people who migrate (Garcia Coll & Marks, 2009; Suarez-Orozco & Suarez-Orozco, 2001). However, traditional perspectives of cultural competence were grounded in the notion of a unidirectional, assimilation model of cultural acquisition (LaFromboise, Coleman, & Gerton, 1993), and the assumption was that participation or adaptation to a new culture could only happen at the expense of the heritage culture (Ryder, Alden, & Paulhus, 2000). This perspective implied that an individual who migrated had two choices: To immerse themselves in their heritage culture or to reject that culture and immerse themselves in the mainstream culture (Gordon, 1964). For young people who migrate, this unidirectional approach held implications because they would necessarily be faced with not participating in one of the cultures that were a part of their world (Sam, 2006).

More recent models of cultural competence are more inclusive and allow room for multiple cultures in one's life (Berry, 1980; LaFromboise et al., 1993; Ryder, Alden, & Paulhus, 2000). A particularly useful model of biculturalism is the Alternation Model of Second Culture Acquisition (LaFromboise et al., 1993). This model is said to be bi-directional and additive and it posits that it is possible for one individual to know and understand two different cultures simultaneously - with no necessary competition between the two. Alternation refers to individuals' ability to participate in different cultural contexts and to effectively and comfortably alternate one's behaviour in accordance with that context (Ogbu & Matute-Bianchi, 1986). This

cultural- and context-specific behaviour is thought to manifest itself accordingly in different “problem-solving, coping, human relational, communication, and incentive motivation styles” (LaFromboise et al., 1993, p. 399). The process of alternation is postulated to be cognitively and even affectively demanding, and researchers in the area have long argued that an outcome of biculturalism for individuals may be an enhanced intuitive, emotional, and cognitive experience in comparison to those who are monocultural (LaFromboise et al., 1993).

**Racial/Ethnic Discrimination.** Racial and ethnic discrimination permeates the lives of many adolescents (Fisher, Wallace, & Fenton, 2000; Szalacha et al., 2003). It is thought to be a key context and determinant in the development and well-being of minority youth (Garcia Coll et al., 1996). Yet, most studies in the area of adolescent development do not take into account contexts of racial and ethnic discrimination (Fisher et al., 2000; Garcia Coll et al., 1996). Racial and ethnic discrimination has been documented on a number of levels, from broader institutional discrimination (e.g., hassled by staff in stores) and educational discrimination (e.g., lowered academic expectations), to peer discrimination (e.g., racial insults; Fisher et al., 2000). Of considerable importance is the distress that is often caused by perceptions of discrimination (Fisher et al., 2000). Perceived discrimination is associated with a whole host of negative mental health outcomes, such as depression and anxiety (Szalacha et al., 2003) and is further found to be negatively associated with school achievement, self-esteem, and psychological resiliency (Wong et al., 2003). These negative outcomes can be exacerbated by some of the challenges that are often associated with adapting to a new culture, such as low English language skills, as well as discrepancies between the values embedded in the dominant culture and traditional cultural values (Garcia Coll, Meyer, & Brillion, 1995).

Importantly, the negative outcomes associated with experiences of racial/ethnic discrimination have been found to be moderated by a number of variables. For example, cross-cultural competency and biculturalism have been found to moderate the negative impact of perceptions of discrimination (Phinney, 1990; Phinney, Madden, & Santos, 1998). These findings suggest that it is important to consider the interaction between cultural adaptation and perceived racial/ethnic discrimination – the experience of discrimination may alter the association between one’s cultural orientation (mainstream culture participation, heritage culture maintenance, and biculturalism) and the adaptation outcomes of the foreign-born adolescents in the current study.

To summarize, the factors associated with cultural orientation (Canadian culture participation, heritage culture maintenance, and biculturalism) were expected to play an important role in promoting the academic achievement and psychological well-being of foreign-born adolescents in BC. Perceived racial/ethnic discrimination was expected to be negatively associated with the outcome variables of interest, academic achievement and psychological well-being. As an added complexity, it was expected that perceptions of racial/ethnic discrimination would play a moderating role in the relationship between cultural orientation (Canadian culture participation, heritage culture maintenance, and biculturalism) and both academic achievement and psychological well-being for the foreign-born adolescents in the study.

### **3.1.5 Social Support**

In addition to positive attitudes, there is overwhelming evidence across the psychosocial and academic domains for the power of social support when facing life challenges (Masten, 2001) and specifically in the process of adaptation to a new country (Simich et al., 2005). Social support can be in the form of family, friends, neighborhoods, larger communities, and formal

health care and social services (Simich et al., 2005). Although social support is a fundamental need for all individuals, there is evidence to suggest that those who migrate are more strongly impacted by the social support they receive, with more social support leading to a range of positive outcomes (Gagné et al., 2012; 2014; Rumberger, 1994; Suarez-Orozco et al., 2009; Vedder, Boekarts, & Seegers, 2005). The present study investigated four potential factors in the academic achievement and psychological well-being of foreign-born adolescents.

**School belonging.** Although individuals can act to fulfill our need for connection and support, there is the often overlooked yet fundamental need to belong to a community (Baumeister & Leary, 1995; Maehr & Midgley, 1996). A sense of belonging to a community is associated with the positive social and emotional development of an individual, with research associating the construct with a number of positive psychological factors such as happiness, calm, and contentment (Osterman, 2000). It is also thought to be foundational to both learning and functioning (Baumeister & Leary, 1995; Maehr & Midgley, 1996; Ryan, 1995). In the context of schools, students who report a higher sense of belonging tend to also report higher grades and more positive learning experiences overall (McDougall, Hymel, Vaillancourt, & Mercer, 2001; Ryan, 1995).

**Family support.** There is evidence for positive family dynamics in immigrant families, such as high levels of family cohesion, parental warmth, and nurturance (Fuligni, 1997; Georgiades et al., 2007). Immigrant children have a greater likelihood of being in dual-parent household with lower rates of divorce (Hernandez et al., 2012). In addition, young people who migrate are oftentimes members of multi-generational households that extend past the traditional nuclear family, and for this reason, are likely to receive educational support from members of the family other than their parents. This can provide young people with a rich source of financial,

emotional, and academic support (Suarez-Orozco, et al., 2010). Indeed, the successful adaptation of young people who migrate is often linked to the support they receive from their families (Costigan & Dokis, 2006; Fuligni, 2001a). Parents of young people who migrate are expected to help their children navigate a foreign education system (Fuligni et al., 2005). Despite the fact that these adults tend to work long hours and lack English skills, and consequently, are not as active in their child's school, parents of young immigrants tend to be unendingly supportive of their children's education (Fuligni, 1997), and this educational support crosses cultural and socioeconomic boundaries as is evidenced by a number of studies (e.g., Fuligni, 2001a; Georgiades et al., 2007).

**Teacher support.** For all young people who migrate, there are a number of factors that can impede the capacity of family members to provide the support necessary (e.g., language barriers, unfamiliarity with the school system), and oftentimes other adults, such as teachers, are identified to bolster support (Li, Holloway, Bempechat, & Loh, 2008). The role of the teacher is important to students, not only academically, but also socially and emotionally (Furman & Buhrmester, 1992). In fact, it is posited that the positive academic and social-emotional adaptation of those who migrate may in part be the highly agentic behaviour those who migrate tend to demonstrate in seeking this support: In a study conducted in the Netherlands, researchers showed that immigrant students were much more likely to seek teacher support for both instructional and emotional reasons (Vedder et al., 2005). Furthermore, although a sense of social support and relational engagement are widely documented contributors to academic success and psychological well-being for all students, those who migrate have been shown to be more greatly impacted by their adult and peer relationships at school than nonimmigrants (Gagné, Shapka, & Law, 2012; Rumberger, 1994; Suarez-Orozco et al., 2009).



**Peer social support.** As young people approach adolescence, there is a shift in the importance and centrality of the peer context in their lives (Bronfenbrenner, 1979; Brown & Klute, 2006). Adolescents are thought to be especially vulnerable during migration transitions because they are dually experiencing the loss of social ties from their birth country and the challenge of rebuilding new ones (Sirin et al., 2013; Suarez-Orozco et al., 2008). Indeed, positive peer relations have a significant impact on overall psychological well-being and adjustment (Way & Pahl, 2001). Further, it has long been established that students perform better at school when they are accepted by their peers (Ladd, 1990). Taken together, this means that for young people who migrate, the groups of people with whom they associate with outside of the home play an important role in shaping their attitudes toward success and act as resources for supporting or hindering their academic success. Based on this, it is not surprising that social support has emerged as a powerful predictor of immigrant success (e.g., Vedder et al., 2005). Specifically, relational engagement has been found to play a compensatory role by acting as a mediator of the relationship between student background and GPA for immigrants (Suarez-Orozco et al., 2009). In contrast, when those who migrate feel isolated from teachers and peers at school, it can have dramatic negative consequences on their academic success (Suarez-Orozco et al., 2009).

Overall, it was expected that school belonging and all types of social support would serve as assets in the academic achievement and psychological well-being of foreign-born adolescents in the current study.

### **3.1.6 Social Position**

**Race/ethnicity.** Researchers have made important strides in disentangling generation status and race/ethnicity in recent years (Quintana et al., 2006). These two factors are difficult to

separate and easy to confound, but more researchers are taking generation status into account in their research in addition to race/ethnicity. Indeed, there are a number of studies that have identified racial/ethnic differences in adjustment across generational lines (e.g., Leventhal et al., 2006; McAndrew, 2009; Portes & Rumbaut, 2001; Suarez-Orozco et al., 2010; Suarez-Orozco et al., 2009). Students of Latin American origins tend to show low academic performance across time (Leventhal et al., 2006; Portes & Rumbaut, 2001; Suarez-Orozco et al., 2009). In the Canadian context, both Spanish-speaking and Creole-speaking students tended to show the lowest levels of achievement (McAndrew et al., 2009). Given the previous work, racial/ethnic background was taken into consideration in the present research.

**Gender.** There is relatively consistent evidence for a gender difference when it comes to academic achievement of those who migrate - the girls are outperforming the boys. This has been documented and discussed extensively in the literature (Fuligni, 1997; Kao & Tienda, 1995; Suarez-Orozco et al., 2009). Portes and Rumbaut (2001) extend this finding to show how girls not only have higher grades, but higher levels of bilingualism, and higher school expectations for themselves. This pattern has yet to be unpacked in the literature on immigration, but it does conform with literature on gender differences for all students (e.g., Arnot, David, & Weiner, 2000). Gender was an important consideration and accounted for in the current study.

**Age.** As discussed in Chapter 1 and 2, the transitions that occur during adolescence, including social and emotional changes and identity development can be compounded for those who migrate who are simultaneously facing the challenges of forming new social ties (Katsiaficas, Suarez-Orozco, Sirin, & Gupta, 2013; Suarez-Orozco et al., 2008) and an ethnic identity, often in the face of discrimination experiences (Greene et al., 2006; Wong et al., 2003).

Indeed, landing in a new context half way through one's education is not an easy task (Hood, 2003).

One's age of arrival can be an important consideration – the results in Study 1 suggested that those adolescents who arrived later in life were more likely to follow trajectories characterized by lower academic achievement and increased MSP-reimbursed mental health service utilization. However other studies have found that students who migrate later in their schooling perform equally as well, and sometimes surpass their immigrant counterparts who arrived at younger ages (Fuligni, 1998; Rumbaut, 1997). To explain this, Portes and Rumbaut (2001) have suggested that children who migrate at a young age may be more similar to second generation immigrants because the majority of their life has been spent in the host country. For the current study, which included a sample of foreign-born adolescents who had all arrived recently, age was taken into account although, given the lack of diversity in the sample, age of arrival was not taken into consideration (refer to Study 1 for a detailed consideration of age of arrival in predicting the adaptation outcomes of foreign-born adolescents in BC).

### **3.1.7 Summary of Study Objectives and Research Questions**

To summarize, the objective of the present study was to explain the variations in academic achievement (English and math grades) and psychological well-being (satisfaction with life and depressive symptoms) for foreign-born adolescents to BC by identifying specific factors that may act as assets and risks in their positive adaptation (both academic and psychological). The focus of the study was on three overarching groups of adaptation factors, (a) academic attitudes, (b) cultural orientation, and (c) social support which were hypothesized to play an important role in explaining both academic achievement and psychological well-being for foreign-born adolescents. To reiterate, the study research questions were as follows: (1) Do

the factors associated with academic attitudes act as assets or risks in the academic achievement and psychological well-being for foreign-born adolescents to BC, taking into account age, gender, and racial/ethnic background? (2) To what extent do the factors associated with cultural orientation act as assets or risks in the academic achievement and psychological well-being for foreign-born adolescents to BC, taking into account age, gender, and racial/ethnic background? (3) To what extent do the factors associated with social support act as assets or risks in the academic achievement and psychological well-being for foreign-born adolescents to BC, taking into account age, gender, and racial/ethnic background?

## **3.2 Methods**

### **3.2.1 Participants**

Participants for this study were sought from secondary schools from two large, urban school districts in British Columbia, Canada in the 2013/2014 (Spring) and the 2014/15 (Fall) academic years. The 184 participants that were recruited were between the ages of 13 and 18 ( $M = 15.89$ ,  $SD = 1.44$ ; adjusted for the time of data collection) and in Grades 8 to 12 ( $M = 9.84$ ,  $SD = 1.18$ ). Age and grade were a notable distinction for this sample, as the participants were on average one year older than the typical student in their grade (i.e., a student in Grade 9 is typically 14 years old, not 15 years old as found in the current sample). Also, slightly more females (55.5% female) than males (44.5% males) were included in the sample.

All participants were foreign-born and reported being in Canada from 2 months to 8 years ( $M = 1.76$  years,  $SD = 1.49$ ) meaning they belong to a cohort of newcomers who arrived in Canada between 2006 and 2014. The majority of the participants reported living in Canada with their families (76%) and a smaller proportion reported living with a host family (21%; an indication that they are currently in Canada as international students). The sample was of

predominantly East Asian descent (over 85% of participants reported their ethnic and/or cultural background as East Asian) and the vast majority of those reported being born in China (67.7%) followed by Taiwan and South Korea (9.8% and 7.1%, respectively). A much smaller proportion of the sample reported being born in other countries such as the Philippines, Dominican Republic, Sri Lanka, Germany, and France. The participants predominantly reported speaking a language other than English at home (89% of the sample). Consistent with the reported birth countries, 73.7% of the sample reported speaking Chinese (making no linguistic distinction), Mandarin, or Cantonese predominantly at home (49.4%, 18.3%, and 6%, respectively). Smaller proportions of the sample reported Korean, Tagalog, Vietnamese, and Spanish as the main language spoken at home (5.4%, 2.2%, 2.2%, and 1.6%, respectively), followed by a few reports of French, Turkish, and English.

The British Columbia (BC) Ministry of Education reported that, for BC students in the 2013/14 school year, Chinese dialects (i.e., Mandarin, Cantonese, and Chinese) were the most commonly reported languages spoken at home, aside from English. Following Chinese dialects, the next most common languages spoken at home were Punjabi, Tagalog, Korean, Spanish, and Vietnamese (BC Ministry of Education, 2015). The consistency between the languages spoken at home for the study sample and those reported at the provincial level provides a fair degree of confidence that the current sample is capturing linguistic/cultural variation in the BC student population. That being said, there are two notable exclusions from the collected sample that must be taken into consideration: First, no students in the current sample reported speaking Punjabi at home. This discrepancy is attributable to the fact that the four secondary schools in which recruitment occurred had significantly lower Punjabi-speaking student populations (0.6-3.9%) than the provincial average (21%; BC Ministry of Education, 2015). Second, between 2006 and

2013 (i.e., the timeframe in which the participants in the current sample arrived in Canada) a substantial proportion of migrants to BC reported English as their mother tongue (ranging from 11.3% to 14.3%; BC Statistics, 2015). As data were collected in English Language Learning (ELL) classrooms, this group of foreign-born students whose mother tongue is English was naturally excluded from the sample because they were not be enrolled in an ELL program of study.

### **3.2.2 Procedures**

Data for the study were collected by a group-administered self-report questionnaire. The student questionnaire was used to collect demographic information (including identifiers to be used for linkage to the school records) and information on student psychological well-being, grades, academic attitudes, social support, and culture (measures described below). Prior to commencing recruitment and data collection, applications were submitted to the UBC Research Ethics Board and the school boards. Upon receiving approval from the UBC REB and the school boards, school principals were emailed with the details of the study and a request to contact teachers within their school.

Of note, recruitment at two time points: The Spring of 2014 and the Fall of 2014. In order to determine if there were any group differences in the responses associated with participants who took the survey in Spring 2014 ( $n = 116$ ) and Fall 2014 ( $n = 68$ ), a series of independent samples  $t$ -tests were run. Means for the two groups were compared for differences on basic demographics (e.g., gender and age), as well as on other variables most likely to be impacted by the point in the school year at which participants were asked to respond (e.g., teacher social support and school connectedness). Of the 11  $t$ -tests performed (not shown), gender was the only significant difference to emerge between the Spring 2014 and Fall 2014 groups (more females

participated in the Fall 2014 wave of data collection). Gender is already an important covariate and as such, will be accounted for in the study analysis. The data from both rounds of data collection were combined for all further analyses.

Data for the current study were collected with the assistance of the ELL departments in all four secondary schools. Two visits were coordinated through each ELL department for all participating classes: The first visit was scheduled as a short presentation about the study at the beginning or end of each class. The aim of the first visit was to describe the nature and objectives of the research, to inform potential participants of their rights as a research participant, and to hand out parental consent forms and participant assent forms to be completed for the forthcoming visit. The parental consent form was translated into six languages: Simplified and Traditional Chinese, Korean, Tagalog, Punjabi, and Farsi. These languages were chosen because they were the most widely spoken in the target communities, based on information produced by BC Statistics. The second visits were scheduled at an agreed upon date, approximately one week later. At this time, the research team returned to administer the questionnaire to those students who wanted to participate and who had returned their consent and assent forms (response rate = 69%). Participants completed the questionnaire during class time while the students who were not participating were asked to work quietly at their desks or outside of the classroom, at the discretion of their teacher (see Appendix B for the full questionnaire).

**English language considerations.** Language barriers to the completion of the survey were a primary concern given the study population of interest and the fact that recruitment took place via ELL departments within each school. Developing translated versions of the questionnaire for the study participants was deemed an unfeasible option primarily because multi-language assessments introduce issues of comparability and equivalence (Ercikan, 2002),

which are beyond the scope of this study. For example, translating tests into multiple languages introduces *test translation error* (Solano-Flores, Backhoff, & Contreras-Nino, 2009). This is the error associated with imperfect or impossible translations, leading to a lack of equivalence between test versions. Test translation error is known to threaten both the comparability and validity of measurements (Solano-Flores et al., 2009). Indeed, test translation is an extensive research process in and of itself and has time, cost, and sample size implications (Solano-Flores et al., 2009; Turkan & Oliveri, 2014) that were not feasible in the completion of the present study and the decision was made to only include participants in the study who had sufficient English skills to be able to complete the questionnaire with some assistance.

A number of steps were taken to ensure that the ELL participants were supported so that they could effectively complete the questionnaire: (1) Scales and individual items on the questionnaire were chosen not only for their psychometric properties but also with an eye to the appropriateness of the language for English Language Learners (e.g., preference was given to simple, non-idiomatic grammar and vocabulary), (2) Prior to commencing data collection, the ELL department staff in each school were provided with copies of the questionnaire and were consulted on the appropriateness of the language level for their students. ELL classroom levels were not completely standardized within and across school boards and as such, classroom teachers were given the final decision as to which ELL classes had a sufficient level of English to complete the questionnaire with some assistance. All schools deemed the questionnaire most suitable for their ELL Level 2-4 classes, (3) As an alternative test accommodation to multi-language translations, a *mini dictionary* supplement was created and distributed to each participant along with their questionnaire (see Appendix B for the full mini dictionary). The supplement offered students with simplified synonyms for the more advanced vocabulary found



in the questionnaire, usually idiomatic or colloquial in nature. For example, *figure out* is a phrasal verb used on page 6 of the questionnaire and the supplement offers two alternate, simplified definitions: *find the answer* or *understand*. The word *desire* is used on page 7 of the questionnaire and the supplement offers *want* as a simplified synonym. Providing customized dictionaries to ELL students has been offered as an accommodation option which has been shown to aid the performance of students who are ELL without impacting the measurement of the intended construct (Li & Suen, 2012). (4) Finally, ample time and classroom support was devoted to questionnaire completion. It was expected that the majority of participants who are ELL would be able to complete the questionnaire in 45 minutes but one hour was designated to the task (a decision made with ELL teacher consultation). Also, it was made clear to students that the questionnaire was not a test and questions were welcome at any point in the process. When available (2 out of 4 schools), multicultural workers were present for any additional translation support, if required. In all, 6 of the 184 participants (3%) were unable to complete the entire questionnaire in the allotted time (1 hour), which provides good evidence about the level-appropriateness of the questionnaire for the vast majority of the sample.

### **3.2.3 Measures – Outcome Variables**

**Academic achievement.** Students were asked to self-report their Math and English grades as part of the questionnaire. Deviating slightly from the standard letter grade format reporting required by the BC Ministry of Education policy (i.e., “F”, “C-“, “C”, “C+”, “B”, and “A”; BC Ministry of Education, 2009), students reported the standard letter grades as well as an “A+”. Letter grades were subsequently recoded from 0 (F) to 6 (A+), respectively. For students who reported percentages rather than letter grades, grades were converted into letter grades, based on the BC Ministry of Education letter grading policy (BC Ministry of Education, 2009).

Participants reported a mean math grade of 4.55 ( $SD = 1.16$ ; which converts to a grade between a B and an A). In English, students reported a mean grade of 3.93 ( $SD = 1.07$ ; which translates to just below a B grade). As a reminder, all participants were English Language Learner (ELL) students and as such English grades refer to ELL class grades.

**Satisfaction with life.** Students' general life satisfaction was measured using the Satisfaction With Life Scale adapted for Children (SWLS-C; Gadermann, Schonert-Reichl, & Zumbo, 2010), which was adapted from the Satisfaction With Life Scale (SWLS; Diener, Emmons, Larsen, & Griffin, 1985). The adapted 5-item scale reports desirable psychometric properties, such as high internal consistency ( $\alpha = .86$ ) and has evidence for convergent and discriminant validity (Gadermann et al., 2010). The SWLS-C was validated with children aged 9-14, which represents the younger end of the current population of interest. Importantly, however, this scale was chosen for its otherwise relevancy to the population in the current study: It was assessed on participants from the same geographic regions as in the current study (i.e., Vancouver and the Lower Mainland of British Columbia) and furthermore, provides evidence to indicate that the scale performs the same for those whose first language is not English (Gadermann et al., 2010). Students were asked to respond to statements on a 7-point scale from 1 (*strongly disagree*) to 7 (*strongly agree*). Sample questions included, "I am happy with my life" and "If I could live my life over, I would have it the same way." A Life Satisfaction variable was created by deriving a mean score for each participant based on all five items (Cronbach's Alpha = .78 for the current sample). The participants in the current sample reported a mean of 3.67 ( $SD = 1.69$ ) indicating that on average, their reports of life satisfaction were on the negative end of the scale.

**Depressive symptoms.** One scale (12 items) from the Behavior Assessment System for Children Second Edition – Self-Report of Personality was used to measure depressive symptoms. The scale possesses good psychometric properties overall (e.g.,  $\alpha = .67$  to  $.88$ ; Reynolds & Kamphaus, 2004) and there is evidence to indicate that across multiple ethnicities, there are no overarching group differences in scores (Lapointe, Garcia, Taubert, & Sleet, 2010). The 12 items in the depression scale required a dichotomous (*True* or *False*) response. Students were asked to respond to items such as, “Nothing is fun anymore”. A depressive symptom score was calculated by summing the responses on all 12 depression items ( $\alpha = .72$  for the current sample). Given that the depression items were dichotomous (i.e., 0 or 1), a total summed score rather than a mean score was derived in order to render the score more interpretable. With the total score ranging from 0-12, the mean depressive symptom score for the current sample was 3.27 ( $SD = 2.31$ ).

### **3.2.4 Measures – Predictor Variables**

**Academic self-efficacy.** Student beliefs about their general ability to complete schoolwork successfully was measured on a 4-point scale ranging from 1 (*Not True*) to 4 (*Very True*) by way of three items: “I can do even the hardest homework if I try”, “I can learn the things taught in school”, and “I can figure out difficult homework.” A Cronbach’s alpha of  $.71$  was reported for this scale (Hoover-Dempsey & Sandler, 2005). A total mean Academic Self-efficacy variable was derived from the mean score of all three items ( $\alpha = .75$  for the current sample). The average mean score for the current study participants was 3.02 ( $SD = 0.66$ ), on the higher end of the 4-point academic self-efficacy scale.

**Academic behavioral investment.** Students were asked to report the amount of time they spend studying or engaging in schoolwork outside of class time. They were asked the amount of time they spent on schoolwork outside of class time on a typical weekday and on the

weekend by way of two questions (e.g., “How much time do you spend on schoolwork outside of class on an average weekday?”). A composite variable was created from the responses on the two questions to obtain an estimate of the average time spent on schoolwork outside of class time per week. The current sample reported spending a mean of 6.20 hours ( $SD = 4.13$ ) on schoolwork outside of the class on weekdays and the weekends.

**Academic expectations.** Two items were developed to measure the academic expectations students have for themselves and another two items were created to measure the academic expectations they perceive their teachers and parents/family members to have for them. Students were first asked to select the level of education he/she expects to receive on a four-point scale, ranging from 1 (high school graduation) to 4 (Graduate or professional degree (e.g., Master’s Degree, PhD or M.D.)). Further to this, students were asked to report the grade they usually expect to receive in their current classes using a scale ranging from “Fail” to “A+” including an option to report “I/They don’t care.” This question format was adapted for two additional items in which the students were asked to report the grades they perceive that their parents/family members and teachers have for them, respectively. For this sample, 92.2 % of the participants reported that they wanted to achieve a university/bachelor’s degree (62.9%) or a graduate or professional degree (such as a PhD or medical degree; 29.3%). Regarding grades, 77.6% of the participants expected to receive an A or A+ in their classes overall (1.1% reported that they didn’t care what grade they received overall). The same percentage of participants (77.6%), reported that their parents/family expected them to receive a grade of A or A+ in their classes overall (4.4% reported their parents did not care). By contrast, 58.6% of the participants reported that their teachers expected them to receive an A or A+ grade (19.9% reported that their teachers did not care).

**Academic expectation stress.** The potential stress associated with academic expectations from parents, teachers, and the students themselves were measured using the Academic Expectations Stress Inventory (AESI; Ang & Huan, 2006). The 9-item AESI has two subscales to capture stress associated with academic expectations from the self (4 items) and parents/teachers (5 items). Each item ranges from 1 (*Never True*) to 5 (*Almost Always True*). While the measure was originally created for Asian populations, the scale has evidence for cross-cultural validity and reported Cronbach's  $\alpha$  ranging from .74 to .89 across cultural groups (Ang, Huan, Braman, 2007). Means scores for each subscale were calculated to create a Parent/Teacher-Academic Expectations Stress score ( $M = 3.09$ ,  $SD = 0.91$ ;  $\alpha = .77$  for the current sample) and a Self-Academic Expectations Stress score ( $M = 3.43$ ,  $SD = 0.94$ ;  $\alpha = .78$  for the current sample). Both mean scores represent reports of stress on the scale between 'sometimes true' and 'often true'.

**Achievement goal-orientation.** The 12-item Achievement Goal Questionnaire - Revised (AGQ-R) was employed to assess four types of achievement goal orientation, based on a 2 x 2 framework: mastery-approach, performance-approach, mastery-avoidance, and performance-avoidance goals. Based on Elliot and McGregor's (2001) AGQ, the AGQ-R was adapted to more accurately measure goals among other issues (Elliot & Murayama, 2008). Each orientation style was measured via three items and participants were asked to respond on a 7-point Likert scale ranging from 1 (*Not at all true for me*) to 7 (*Very true for me*). For example, in order to capture performance-avoidance goals, participants were asked to indicate the extent to which they agree with the following: "I just want to avoid doing poorly in class." For the AGQ-R, Cronbach  $\alpha$ 's of .84, .88, .92, and .94 have been reported for mastery-approach, mastery-avoidance, performance-approach, and performance-avoidance goals, respectively (Elliot & Murayama, 2008). Further to

this, there is evidence to indicate that the AGQ and a 2 x 2 achievement goal framework is both a reliable and valid measure across cultures (e.g., in Taiwanese adolescents; Chiang, Yeh, Lin, & Hwang, 2011). Total mean scores for each of the four types of achievement goal orientation were calculated for each participant based on the select items associated with each subscale. For the current sample, Cronbach's alpha's of Mastery-Approach, Mastery-Avoidance, Performance-Approach, and Performance-Avoidance were found to be .66, .78, .83, and .64, respectively. Participants in the sample reported a Mean of 5.36 ( $SD = 1.04$ ) for the Mastery-Approach orientation (relatively high on the 7-point scale). On average, the sample scored slightly lower on the Mastery-Avoidance, Performance-Approach, and Performance-Avoidance orientations ( $M = 4.56$ ,  $SD = 1.33$ ;  $M = 4.71$ ,  $SD = 1.44$ ;  $M = 4.74$ ,  $SD = 1.30$ , respectively).

**Cultural orientation.** Mainstream culture participation and heritage culture maintenance, were measured using the Vancouver Index of Acculturation (VIA). To further understand the role of biculturalism (i.e., the combined role of mainstream culture participation and heritage culture maintenance), an interaction term was created which was the product of the mainstream culture participation and heritage culture maintenance scores. The VIA is a 20-item questionnaire and measures the extent to which an individual participates and identifies with dominant (mainstream) and non-dominant (heritage) cultures (Ryder et al., 2000). Measured on a 9-point Likert scale from 1 (*strongly disagree*) to 9 (*strongly agree*), the VIA items assess three domains: values, social relationships, and adherence to traditions (Ryder et al., 2000). A sample item for a participant with a Chinese heritage culture is, "I enjoy social activities with people from the same Chinese culture as myself". The VIA is appropriate for measuring biculturalism in that it considers and measures acculturation as a bidimensional construct of orthogonal scales such that both participants identification with their heritage culture and the mainstream culture

are represented (10 items per subscale). The benefit of a bidimensional measure of acculturation is that it has the ability to capture those individuals who are engaged in both cultures, that is highly bicultural individuals (Kang, 2006). The VIA possesses sound psychometric properties, yielding alphas above .80 for dominant and non-dominant culture scales across a number of samples (Ryder et al., 2000). A Mainstream subscore and a Heritage subscore were derived by calculating the mean across all 10 items of each subscale (the calculated Cronbach's alphas for the current sample were  $\alpha = .88$  and  $\alpha = .9$ , respectively). The current sample, on average, scored higher on the Heritage score in comparison to the Mainstream score ( $M = 6.77$ ,  $SD = 1.45$ ;  $M = 5.88$ ,  $SD = 1.39$ , respectively).

**School belonging.** Students' perceptions of their connectedness to their school were assessed by way of 5 items on a 5-point Likert scale, ranging from 1 (*Strongly Disagree*) to 5 (*Strongly Agree*). This scale has been shown to possess good reliability ( $\alpha = .80$ ; Waters, Cross, & Shaw, 2010). Sample items include, "I feel safe at my school" and "I feel like I am a part of my school." A School Connectedness score was derived for each student by calculating the mean of all 5 items ( $\alpha = .74$  for the current sample). Participants in the present sample reported a mean score of 3.76 ( $SD = 0.63$ ). This average score represents a response between 'neither disagree or agree' and 'agree'.

**Social support.** In order to determine the source and type of social support students perceive, twelve count items were developed. Students were asked to report the number of teachers (or adults at school), peers (defined as friends or other people who are around your age), or family members (e.g., mother or brother) they would feel comfortable going to for personal help ("when you are mad, sad, or stressed"), school help, or just to hang out, respectively. For example, to capture perceptions of peer support for personal help, the item queried, "How many

peers are you comfortable going to when you are mad, sad, or stressed?” These social support questions were developed for a previous study (with a similar sample) and were found to be positively correlated with other positive outcomes (e.g., school belonging) and emerged as a positive predictor of psychological well-being (Gagné et al., 2012). The rich findings that emerged in using these social support questions with a similar population in past work provided good reason to make use the same items in the current study.

For the current sample, a number of outliers were identified for each of the social support variables. Given that outliers can have a disproportionate effect on the analyses (Tabachnick & Fidell, 2001), a decision was made to recode the extreme values. A cut-off point for defining extreme values was determined by examining the frequency distributions for each of the 9 variables in order to determine which responses fell at the extreme high end of the scale, outside of the natural break in the distribution (i.e., the outliers). Based on this, a cut-off score of 25 was deemed as appropriate. Meaning, all responses of 25 or more were collapsed and recoded as 25. Based on the recoded data, participants reported that they had an average of 3 peers they were comfortable going to for personal support ( $M = 3.39$ ,  $SD = 4.10$ ), 5 peers for school help ( $M = 5.43$ ,  $SD = 5.10$ ), and 8 peers for companionship ( $M = 7.88$ ,  $SD = 6.35$ ). When it came to family members, participants reported that they had an average of 2 family members they were comfortable going to for personal support ( $M = 2.27$ ,  $SD = 2.15$ ), 2 family members for school help ( $M = 2.04$ ,  $SD = 1.89$ ), and 4 family members for companionship ( $M = 3.80$ ,  $SD = 3.66$ ). Finally, participants reported that they had an average of 2 teachers that they were comfortable going to for personal support ( $M = 1.52$ ,  $SD = 2.02$ ), 3 teachers for school help ( $M = 3.26$ ,  $SD = 2.85$ ), and 2 teachers for companionship ( $M = 1.61$ ,  $SD = 2.37$ ).



**Perceived racial and ethnic discrimination.** Participants' perceptions of discrimination and their distress associated with perceptions of discrimination were measured by their responses on the Adolescent Discrimination Distress Index (Fisher et al., 2000). The 15-item measure accounts for distress associated with perceptions of racial/ethnic discrimination in institutional, educational, and peer contexts (i.e., three subscales). Each item asks participants to respond to whether or not they have experienced a certain type of discrimination because of their race or ethnicity (i.e., *yes* or *no*). For example, one item states, "Others your age did not include you in their activities". If the response was affirmative, participants were asked to indicate the extent to which the scenario upset them (i.e., caused them distress). This was measured on a 5-point scale from 1 (*not at all*) to 5 (*extremely*). The measure was developed with a multi-ethnic sample and good reliability was found for the institutional, educational, and peer subscales ( $\alpha = .72$ ,  $\alpha = .60$ ,  $\alpha = .60$ , respectively; Fisher et al., 2000). For the present sample, scores were first summed on the dichotomous response to measure the frequency with which the participants reported instances of discrimination. The participants reported experiencing a mean of 4.11 ( $SD = 3.00$ ) discrimination experiences of the possible 15 items. For those reporting discrimination experiences, a total mean perceived discrimination score was calculated for each participant (a Cronbach's alpha of .76 was calculated for the current sample). Participants who experienced discrimination reported a mean level of distress associated with that experience of 2.35 ( $SD = 13.03$ ), which indicates being 'slightly' to 'moderately' upset. The discrimination distress scores were further subset into scores for Educational, Peer, and Institutional Discrimination Distress ( $M = 2.62$ ,  $SD = 0.86$ ;  $M = 2.49$ ,  $SD = 0.98$ ;  $M = 2.17$ ,  $SD = 0.90$ , respectively). Cronbach's alphas calculated for the educational, peer, and institutional subscales were found to be

unacceptably low ( $\alpha = .31$ ,  $\alpha = .43$ ,  $\alpha = .58$ , respectively) and as such, a decision was made to utilize only the perceived discrimination scores in the current study.

**Social position.** Factors of social position (age, gender, and racial/ethnic background) were captured by participant self-reports as part of the demographic portion of the student questionnaire. For racial/ethnic background, students were asked to select from a number of ethnic categories, or choose ‘Other’ and describe their ethnicity. Age was calculated based upon birth date and fractions of years were maintained (to two decimal places). Gender was coded such that 1 = female, 0 = male. Given the resulting racial/ethnic homogeneity of the sample (recall that the vast majority of the participants in the sample were of East Asian descent - the other racial/ethnic groups only captured between 2 and 11 participants in total), a decision was made to remove racial/ethnic background as a variable in the final models. This decision was made given the lack of interpretability due to the uneven group sizes and in an effort to preserve power in the models where possible.

### 3.2.5 Analysis

**Preliminary analyses.** Prior to running the main analyses, histograms were plotted against the normal curve, Q-Q Plots were examined, and the properties of the distributions (e.g., Skewness, Kurtosis) were tested for normality. English grade, math grade, and depressive symptoms all displayed some evidence of skewness. Given the nature of the variables, the skewness was expected. Math and English grades were negatively skewed, which is an indication that grade distributions are skewed on the x-axis towards higher grades (vs. failing grades). In the case of depressive symptoms, skewness is also to be expected as it indicates that the distribution is skewed towards the lower end – that is, towards having fewer depressive symptoms. Maximum Likelihood (ML) estimation (the estimation method to be utilized in the

current study), is considered relatively robust in the presence of mild nonnormality (Byrne, 2012). Nevertheless, in all analyses described here, models were run twice using the standard ML estimator as well as the robust Maximum Likelihood (MLM) option, an estimator with robust standard errors that is recommended to be applied with nonnormal data (Muthén & Muthén, 2010). As recommended by Byrne (2012), little to no differences in MLM and ML estimates are indicative of sufficiently normal data and in this case, ML estimation were considered as the appropriate choice over MLM estimation. This was the case for all three models in the present study, and as such, all results reported are based on ML estimation.

Using MPlus (version 7.0), three hypothesized path analyses were created to model the factors associated with academic attitudes, cultural orientation, and social support on the four outcomes (i.e., endogenous) variables of interest, English grade, math grade, satisfaction with life, and depressive symptoms. Path analysis was chosen over regression modeling because it has the capacity to simultaneously estimate multiple paths (Lleras, 2005). Structural Equation Modeling (SEM) was also considered but deemed inappropriate because of the small study sample (Kline 2005). Indeed, small sample size remained an important consideration in using a path analysis approach and our final models were restricted to 26 or fewer free parameters (i.e., 7-11 participants per parameter estimated). This participant-parameter ratio pushes the lower end of what is generally recommended (e.g., Kline, 2005), however, given that the results were statistically and theoretically sound, this ratio was maintained as acceptable for the purposes of this study. Note that this parameter restriction also satisfies model identification requirements (i.e., the *t*-rule) – the number of variances and covariances in the three models were in each case greater than the number of parameters to be estimated (Kaplan, 2009).

Models were fit from least restrictive (i.e., no parameter constraints) with increasing restriction until optimal model fit was obtained. Decisions about model fit were based on a complement of goodness-of-fit indices: Chi-Square Test of Model Fit ( $\chi^2$ ), Comparative Fit Indices (CFI), Standardized Residual Root Mean Residuals (SRMR), and Root Mean Square Error of Approximation (RMSEA).  $\chi^2$  values are conventionally reported as they represent the discrepancy between the unrestricted and restricted covariance matrix, with higher probabilities associated with the  $\chi^2$  indicating a better fit between the hypothesized model and the perfect fit ( $\chi^2$  values that are non-significant are indicative of good model fit; Byrne, 2012). The  $\chi^2$  goodness-of-fit indicator is sensitive to sample size but is considered to be a reasonable measure of fit for smaller sample sizes (Byrne, 2012), as in the present study.

The reporting of multiple fit indices is widely suggested and in accordance with Hu and Bentler's (1999) recommendation, Comparative Fit Indices (CFI), Standardized Residual Root Mean Residuals (SRMR), and Root Mean Square Error of Approximation (RMSEA) were also utilized to make decisions about model fit. The CFI provides a measure of the improvement in model fit for the hypothesized model, in comparison to the baseline model (Byrne, 2012). CFI values that approach 1 are indicative of a well-fitting model – Hu & Bentler (1999) recommend using .95 as an appropriate cutoff to indicate a well-fitting model. SRMR and RMSEA are both used to determine the extent to which the hypothesized model fits the data sample (Byrne, 2012). In the case of both SRMR and RMSEA, decreasing values are indicative of better fit (values less than .08 and .05 are thought to be indicative of good fit for SRMR and RMSEA, respectively; Hu & Bentler, 1999). In the current study, the above four fit indices consistently show evidence for good model fit across all three models. Please refer to Table 3.1 for a summary of the above fit statistics for the academic attitudes, cultural orientation, and social support models.

Table 3.1 *Summary of Fit Statistics for the Academic Attitudes, Cultural Orientation, and Social Support Path Analyses Models*

| Model                | $\chi^2$ | <i>df</i> | <i>p</i> | $\chi^2/df$ | CFI  | SRMR | RMSEA | 90% CI for RMSEA |
|----------------------|----------|-----------|----------|-------------|------|------|-------|------------------|
| Academic Attitudes   | 5.77     | 5         | .33      | 1.15        | .99  | .03  | .03   | [.000, .118]     |
| Cultural Orientation | 6.71     | 5         | .24      | 2.45        | .97  | .04  | .05   | [.000, .139]     |
| Social Support       | 4.73     | 5         | .45      | 1.05        | 1.00 | .03  | .00   | [.000, .107]     |

*Note.* CFI = Comparative Fit Index, SRMR = Standardized Root Mean Square Residual, RMSEA = Root Mean Square Error of Approximation

### 3.3 Results

Given the small sample size, model specification was an important step in the analytic process in order to preserve power. Zero-order correlations were examined for all exogenous and endogenous variables (i.e., predictors and outcomes) included in the models (see Table 3.2 to follow). Upon initial inspection, neither age nor sex were correlated with any of the variables of interest and upon initial analysis, after finding that they were not predictive of any of the outcome variables (as main effects or moderators), they were removed from the final models to preserve power.

Table 3.2 *Zero-order Correlation Matrices for the Academic Achievement and Psychological Well-being Outcome Variables and Academic Attitudes, Cultural Orientation, and Social Support Predictor Variables*

|              | 1      | 2     | 3       | 4       | 5      | 6      | 7      | 8     | 9     | 10     | 11     | 12    | 13     | 14     | 15    | 16   | 17 |
|--------------|--------|-------|---------|---------|--------|--------|--------|-------|-------|--------|--------|-------|--------|--------|-------|------|----|
| 1. Math      | 1      |       |         |         |        |        |        |       |       |        |        |       |        |        |       |      |    |
| 2. English   | 0.03   | 1     |         |         |        |        |        |       |       |        |        |       |        |        |       |      |    |
| 3. SWL       | 0.08   | 0.21* | 1       |         |        |        |        |       |       |        |        |       |        |        |       |      |    |
| 4. Depress   | 0.10   | -0.16 | -0.28** | 1       |        |        |        |       |       |        |        |       |        |        |       |      |    |
| 5. Self-Eff. | 0.30** | 0.12  | 0.31**  | -0.16*  | 1      |        |        |       |       |        |        |       |        |        |       |      |    |
| 6. Acad Str  | 0.10   | 0.01  | -0.10   | 0.26**  | 0.11   | 1      |        |       |       |        |        |       |        |        |       |      |    |
| 7. Mast. Ap  | 0.19*  | 0.13  | 0.31**  | -0.20*  | 0.35** | 0.32** | 1      |       |       |        |        |       |        |        |       |      |    |
| 8. Perf. Ap  | 0.34** | -0.05 | 0.08    | 0.18*   | 0.26** | 0.22** | 0.34** | 1     |       |        |        |       |        |        |       |      |    |
| 9. Perf. Av  | -0.14  | 0.04  | 0.09    | 0.15*   | 0.02   | 0.16*  | 0.27** | 0.19* | 1     |        |        |       |        |        |       |      |    |
| 10. Heritage | 0.02   | 0.00  | 0.33**  | 0.00    | 0.28** | 0.17*  | 0.23** | 0.03  | 0.16* | 1      |        |       |        |        |       |      |    |
| 11. Canad    | -0.06  | 0.21  | 0.28**  | -0.20*  | 0.15   | 0.08   | 0.26** | 0.04  | 0.13  | 0.46** | 1      |       |        |        |       |      |    |
| 12. Discrim  | 0.07   | -0.04 | -0.08   | 0.27**  | 0.05   | 0.19*  | 0.08   | 0.07  | 0.09  | 0.08   | 0.17   | 1     |        |        |       |      |    |
| 13. Teacher  | -0.04  | 0.12  | 0.19*   | -0.16   | 0.14   | -0.05  | 0.20*  | -0.13 | -0.02 | 0.11   | 0.12   | -0.05 | 1      |        |       |      |    |
| 14. Family   | -0.03  | 0.24* | 0.32**  | -0.20*  | 0.07   | -0.06  | 0.11   | 0.03  | 0.05  | 0.25** | 0.14   | 0.00  | 0.48** | 1      |       |      |    |
| 15. Sch. Blg | -0.01  | 0.09  | 0.44**  | -0.35** | 0.26** | -0.08  | 0.26** | 0.10  | 0.08  | 0.14   | 0.30** |       | 0.23** | 0.25** | 1     |      |    |
| 16. Age      | -0.01  | -0.05 | -0.07   | 0.07    | 0.06   | 0.16   | 0.01   | -0.06 | 0.05  | 0.04   | -0.03  | 0.02  | 0.05   | 0.01   | -0.11 | 1    |    |
| 17. Sex      | -0.04  | 0.10  | 0.05    | -0.09   | 0.03   | 0.18   | 0.15   | -0.04 | 0.01  | 0.04   | 0.02   | 0.06  | -0.11  | -0.08  | -0.01 | 0.00 | 1  |

*Note.* SWL = Satisfaction With Life, Depress = Depressive Symptoms, Self-Eff. = Self-Efficacy, Acad Str = Academic Self-Expectation Stress, Mast. Ap = Mastery Approach, Perf. Ap = Performance Approach, Perf. Av = Performance Avoidance, Heritage = Heritage Culture Maintenance, Canad = Canadian Culture Participation, Discrim = Perceived Racial/Ethnic Discrimination, Teacher = Teacher Support, Family = Family Support, Sch. Blg = School Belonging, E. Asian = East Asian Ethnicity flag.

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

### 3.3.1 Path Analysis 1 – Academic Attitudes

Path analysis 1 tested the hypothesis that academic attitudes (academic self-efficacy, academic behavioural investment, academic self-expectation stress, academic parent-expectation stress, and mastery-approach, mastery-avoidance, performance-approach, performance avoidance goal orientations) were predictive of academic achievement (English and math grades) and social-emotional well-being (satisfaction with life and depressive symptoms) for foreign-born adolescents in BC. Initially, all academic attitude variables were entered into the model as exogenous variables and were set to freely vary across all four endogenous variables (English grade, math grade, satisfaction with life, and depressive symptoms). However, academic behavioural investment, academic parent-expectation stress and mastery-avoidance goal orientation variables (all not significant) were removed from the final model in order to preserve power. Also, the paths between the endogenous and exogenous variables were constrained (fixed to a value of 0) in the final model with the exception of the path between satisfaction with life and depressive symptoms (these variables were significantly negatively correlated and as such were left free to vary). These constraints were applied in order to reduce the number of parameters to be estimated in the model and therefore preserve power. As can be seen in Table 3.3, none of the exogenous academic attitudes variables significantly predicted English grade for the sample. As a whole, the academic attitude variables in the final model did significantly explain the variance in math grade, satisfaction with life, and depressive symptoms (22%, 18%, and 25% of the variance, respectively; see Table 3.3 for R-square values).

Table 3.3 also provides the individual parameter estimates, including the corresponding standard errors and the estimate to standard error estimate (i.e., z-score test statistic) and

significance levels. Academic self-efficacy significantly predicted math grade, satisfaction with life, and depressive symptoms such that higher academic self-efficacy was associated with higher math grades and satisfaction with life. Lower academic self-efficacy was associated with increased reports of depressive symptoms. Academic self-expectation stress was significantly predictive of satisfaction with life and depressive symptoms, in the hypothesized direction – higher academic expectation stress was associated with lower satisfaction with life and more depressive symptoms. With respect to goal orientations, a mastery-approach orientation was found to be significantly predictive of satisfaction with life (a positive association) and depressive symptoms (a negative association). A performance-approach goal orientation was predictive of both math grades and depressive symptoms such that, increasing performance-approach orientation was associated with higher math grades as well as more depressive symptoms. Finally, a performance-avoidance goal orientation was a significant predictor of math grade (this orientation associated with lower math grades). Please see Figure 3.1 for an illustration of these relationships and estimates.

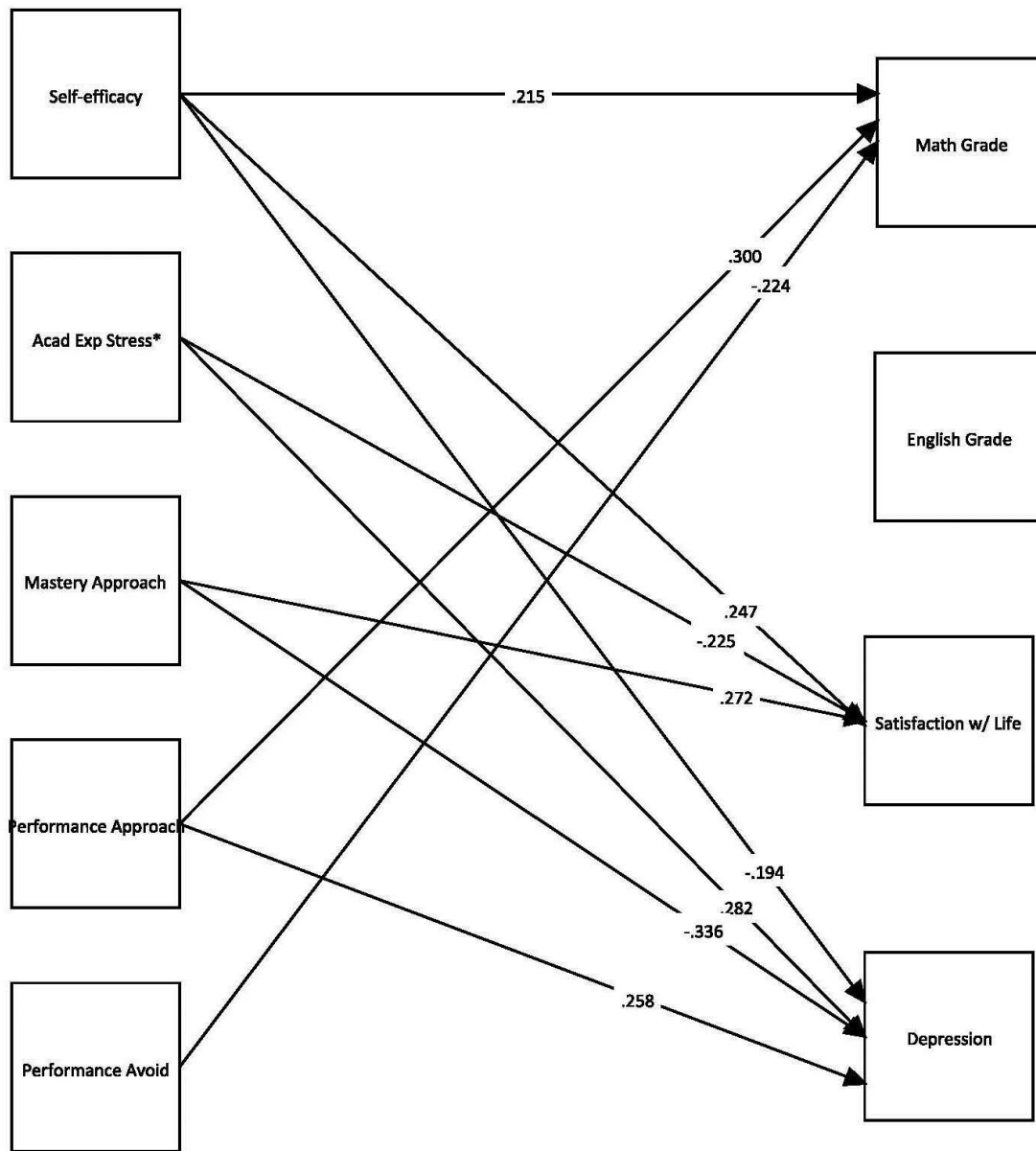


Table 3.3 *Path Analysis Results for Academic Attitude Factors in Predicting English Grade, Math Grade, Satisfaction With Life, and Depressive Symptoms for a Sample of Foreign-born adolescents to British Columbia*

|                             | Estimate | SE    | Estimate/SE | R <sup>2</sup> |
|-----------------------------|----------|-------|-------------|----------------|
| English Grade ON            |          |       |             | .07            |
| Self-efficacy               | 0.188    | 0.119 | 1.578       |                |
| Academic Expectation Stress | -0.005   | 0.114 | -0.046      |                |
| Mastery Approach            | 0.136    | 0.120 | 1.133       |                |
| Performance Approach        | -0.123   | 0.116 | -1.062      |                |
| Performance Avoidance       | 0.070    | 0.107 | 0.653       |                |
| Math Grade ON               |          |       |             | .22***         |
| Self-efficacy               | 0.215    | 0.083 | 2.601**     |                |
| Academic Expectation Stress | 0.085    | 0.079 | 1.067       |                |
| Mastery Approach            | 0.022    | 0.089 | 0.248       |                |
| Performance Approach        | 0.300    | 0.082 | 3.677***    |                |
| Performance Avoidance       | -0.224   | 0.079 | -2.852**    |                |
| Satisfaction w/ Life ON     |          |       |             | .18***         |
| Self-efficacy               | 0.249    | 0.080 | 3.122**     |                |
| Academic Expectation Stress | -0.225   | 0.076 | -2.949**    |                |
| Mastery Approach            | 0.271    | 0.084 | 3.235***    |                |
| Performance Approach        | -0.054   | 0.079 | -0.689      |                |
| Performance Avoidance       | 0.013    | 0.076 | 0.165       |                |
| Depressive Symptoms ON      |          |       |             | .25***         |
| Self-efficacy               | -0.193   | 0.076 | -2.541**    |                |
| Academic Expectation Stress | 0.282    | 0.072 | 3.931***    |                |
| Mastery Approach            | -0.334   | 0.079 | -4.217***   |                |
| Performance Approach        | 0.258    | 0.074 | 3.508***    |                |
| Performance Avoidance       | 0.129    | 0.072 | 1.789       |                |

*Note.* Estimates based on STDYX standardization.

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



*Figure 3.1.* A path analysis illustration of academic attitude factors in predicting English Grade, Math Grade, Satisfaction With Life, and Depressive Symptoms for a sample of foreign-born adolescents to British Columbia ( $N=184$ ). Only statistically significant path estimates are illustrated ( $p < .01$ ). Self-Efficacy = Academic Self-Efficacy; Acad Exp Stress = Academic Self-Expectation Stress; Performance Avoid = Performance Avoidance; Depression = Depressive Symptoms.

### **3.3.2 Path Analysis 2 – Cultural Orientation**

Path analysis 2 tested the hypothesis that the factors associated with cultural orientation would be predictive of academic achievement (English and math grades) and psychological well-being (satisfaction with life and depressive symptoms) for young people who migrate to BC. The cultural orientation factors included were heritage culture maintenance, Canadian culture participation, biculturalism (accounted for by an interaction term, heritage culture maintenance X Canadian culture participation), and perceived racial/ethnic discrimination. Initially, all exogenous variables were set to freely vary across all four endogenous variables however, in the final model the paths between all of the endogenous variables exogenous variables were constrained amongst themselves (fixed to a value of 0.00) with the exception of the path between satisfaction with life and depressive symptoms (which were significantly negatively correlated and as such were left free to vary). As can be seen in Table 3.4, the exogenous variables associated with culture in the model were found to explain 23% and 10% of the variance in satisfaction with life and depressive symptoms, respectively, for the current sample. The variances in English and math grades were not explained by the cultural orientation variables in the model (as can be seen by the R-square values presented in Table 3.4). However, the individual path estimate between Canadian culture maintenance and English grade did emerge as significant (even though the model as a whole was not significant). As a result, it was deemed prudent to refrain from interpreting this significant relationship without further clarification. It is expected that a larger sample would help to clarify this relationship, given the relatively large standard errors for the prediction of English grade. Table 3.4 also provides the individual parameter estimates, including the corresponding standard errors, the estimate to standard error estimate (i.e., z-score test statistic) and the significance levels. Heritage culture maintenance and

biculturalism were found to significantly predict satisfaction with life such that more heritage cultural maintenance and higher biculturalism were associated with higher satisfaction with life. By contrast, Canadian culture maintenance was found to be predictive of depressive symptoms for the sample such that higher Canadian culture maintenance was associated with fewer depressive symptoms. Please see Figure 3.2 for an illustration of these relationships and estimates.

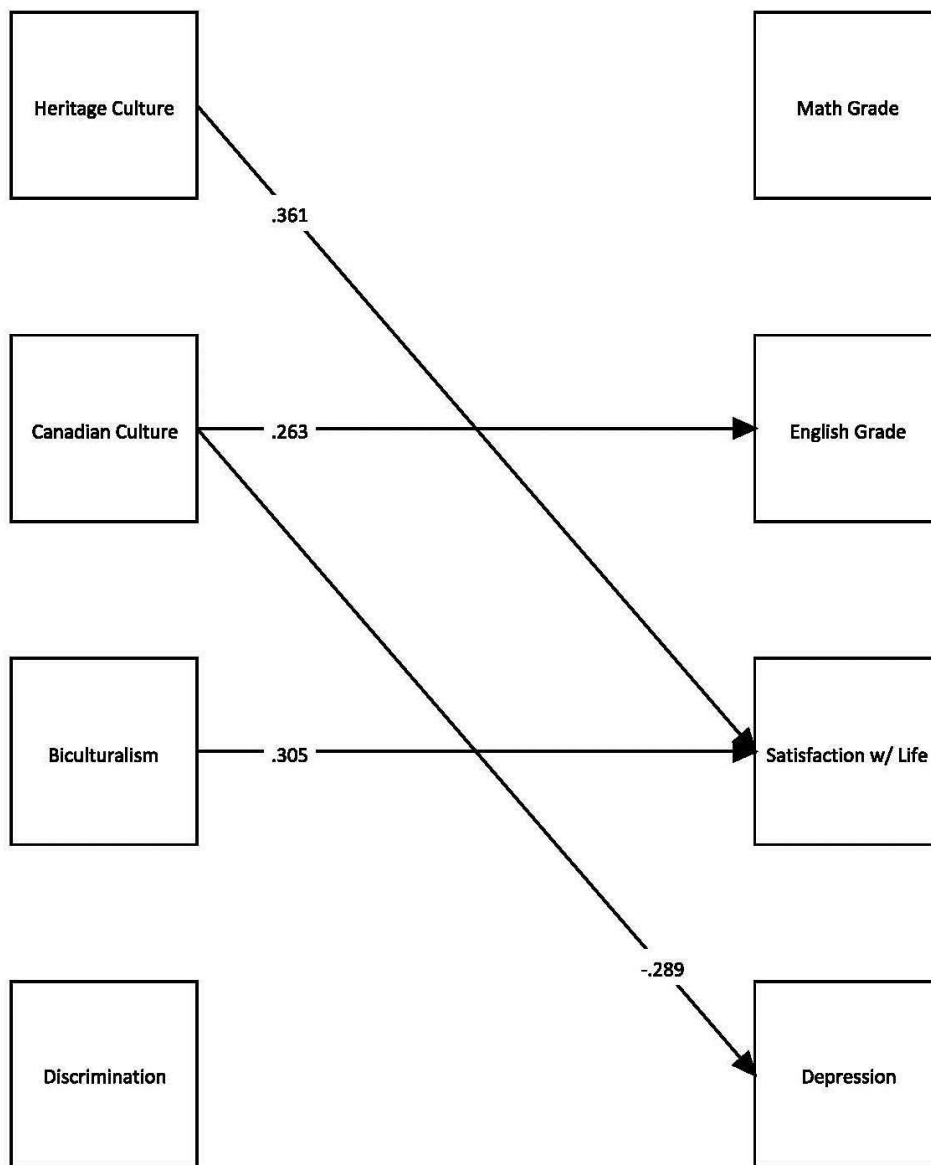
In order to further delineate the role of biculturalism in contrast with the separate roles of heritage culture maintenance and Canadian culture participation in the prediction of satisfaction with life, satisfaction with life mean scores were plotted for biculturalism, heritage cultural maintenance, and Canadian culture participation in low, medium, and high categories (see Figure 3.3; three categories were created by splitting groups one standard deviation above and below the mean in each case).

Table 3.4 *Path Analysis Results for Factors Associated with Cultural Orientation in Predicting English Grade, Math Grade, Satisfaction With Life, and Depressive Symptoms for a Sample of Foreign-born adolescents to British Columbia*

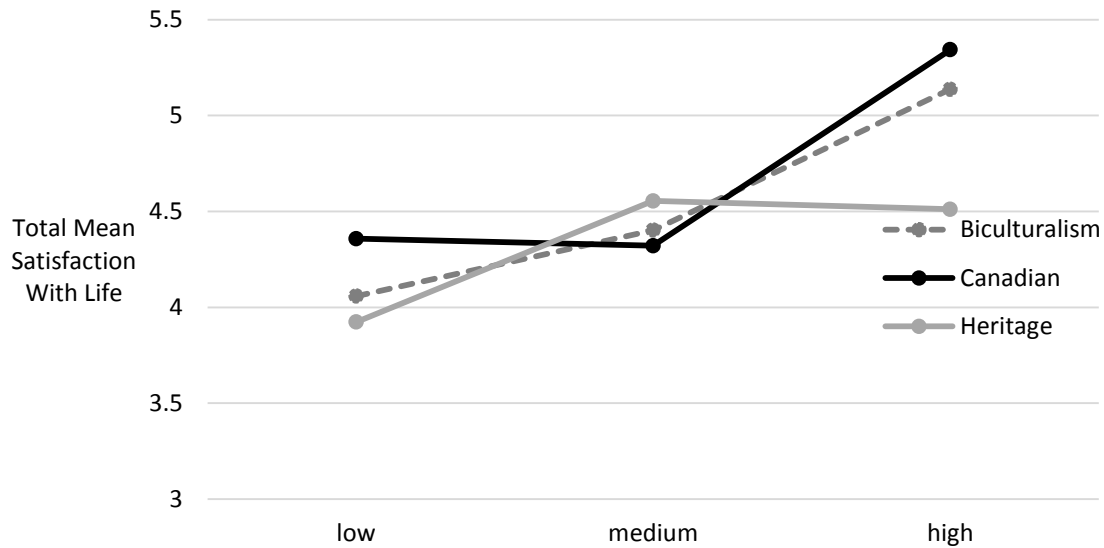
|                         | Estimate | SE    | Estimate/SE | R <sup>2</sup> |
|-------------------------|----------|-------|-------------|----------------|
| English Grade ON        |          |       |             | 0.10           |
| Heritage                | -0.141   | 0.133 | -1.059      |                |
| Canadian                | 0.263    | 0.118 | 2.234*      |                |
| Biculturalism           | 0.129    | 0.146 | 0.887       |                |
| Discrimination          | 0.105    | 0.120 | 1.248       |                |
| Math Grade ON           |          |       |             | 0.03           |
| Heritage                | 0.148    | 0.108 | 1.372       |                |
| Canadian                | -0.023   | 0.106 | -0.212      |                |
| Biculturalism           | 0.011    | 0.104 | 0.101       |                |
| Discrimination          | 0.068    | 0.096 | 0.701       |                |
| Satisfaction W/ Life ON |          |       |             | 0.23***        |
| Heritage                | 0.360    | 0.084 | 4.299***    |                |
| Canadian                | 0.120    | 0.086 | 1.393       |                |
| Biculturalism           | 0.305    | 0.083 | 3.654***    |                |
| Discrimination          | 0.088    | 0.082 | 1.070       |                |
| Depressive Symptoms ON  |          |       |             | 0.10*          |
| Heritage                | 0.059    | 0.096 | 0.617       |                |
| Canadian                | -0.284   | 0.091 | -3.109**    |                |
| Biculturalism           | -0.122   | 0.094 | -1.302      |                |
| Discrimination          | -0.082   | 0.088 | -0.936      |                |

*Note.* Estimates based on STDYX standardization. Heritage = Heritage Culture Maintenance, Canadian = Canadian Culture Participation, Biculturalism = Heritage Culture Maintenance X Canadian Culture Participation, Discrimination = Perceived Racial/Ethnic Discrimination.

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



*Figure 3.2.* A path analysis illustration of cultural orientation factors in predicting English Grade, Math Grade, Satisfaction With Life, and Depressive Symptoms for a sample of foreign-born adolescents to British Columbia ( $N=184$ ). Only statistically significant path estimates are illustrated ( $p < .01$ ). Canadian Culture = Canadian Culture Participation; Heritage Culture = Heritage Culture Maintenance; Biculturalism = Heritage Culture Maintenance X Canadian Culture Participation, Discrimination = Perceived Racial/Ethnic Discrimination, Depression = Depressive Symptoms.



*Figure 3.3.* Total mean Satisfaction with Life reported by study participants in the presence of low, medium, and high Biculturalism, Canadian Culture Participation, and Heritage Culture Maintenance ( $N=184$ ). Canadian = Canadian Culture Participation; Heritage = Heritage Culture Maintenance, Biculturalism = Heritage Culture Maintenance X Canadian Culture Participation.

### 3.3.3 Path Analysis 3 – Social Support

Path analysis 3 tested the hypothesis that social support (as indicated by peer, teacher, family support and school belonging) would be predictive of academic achievement (English and math grades) and social-emotional well-being (satisfaction with life and depressive symptoms) for young people who migrate to BC. Initially, all social support variables were entered into the model as exogenous variables and were set to freely vary across all four endogenous variables (English grade, math grade, satisfaction with life, and depressive symptoms). Note that the peer social support variable was removed from the final model in the initial stages of model development as a means to address the suppression effects that arose with the inclusion of the variable. Peer social support was positively correlated with satisfaction with life, as expected, however it had emerged as negatively predictive of satisfaction with life in the model. Upon further inspection, it was found that school belonging was sufficiently collinear with peer

support, which together created a suppression effect for peer support in the model. In the absence of information to further delineate the suppression effect, a decision was made to remove peer support from the final model.

Consistent with Model 1 and 2, the paths between all of the endogenous variables were constrained (fixed to a value of 0.00) with the exception of the path between satisfaction with life and depressive symptoms. As can be seen in Table 3.5, the exogenous variables associated with social support in the model were found to explain 23% and 14% of the variance in satisfaction with life and depressive symptoms, respectively, for the current sample. As indicated by the R-square values that can be seen in Table 3.5, the variances in English and math grades were not explained by the social support variables in the model. However, the individual path estimate between teacher support and English grade did emerge as significant. Unfortunately, this significant relationship is not to be interpreted without further clarification of the relationship – given the larger standard error estimates in the prediction of English Grade, it is expected that a larger sample would help to clarify this relationship. Table 3.5 also provides the individual parameter estimates, including the corresponding standard errors as well as the estimate to standard error estimate (i.e., z-score test statistic) and significance levels. School belonging significantly predicted both satisfaction with life and depressive symptoms in the sample in opposing directions. That is, school belonging was associated with higher satisfaction with life and fewer depressive symptoms. Teacher support was also found to significantly predict satisfaction with life such that higher teacher support was associated with higher satisfaction with life for the sample. Please see Figure 3.4 for an illustration of these relationships and estimates.

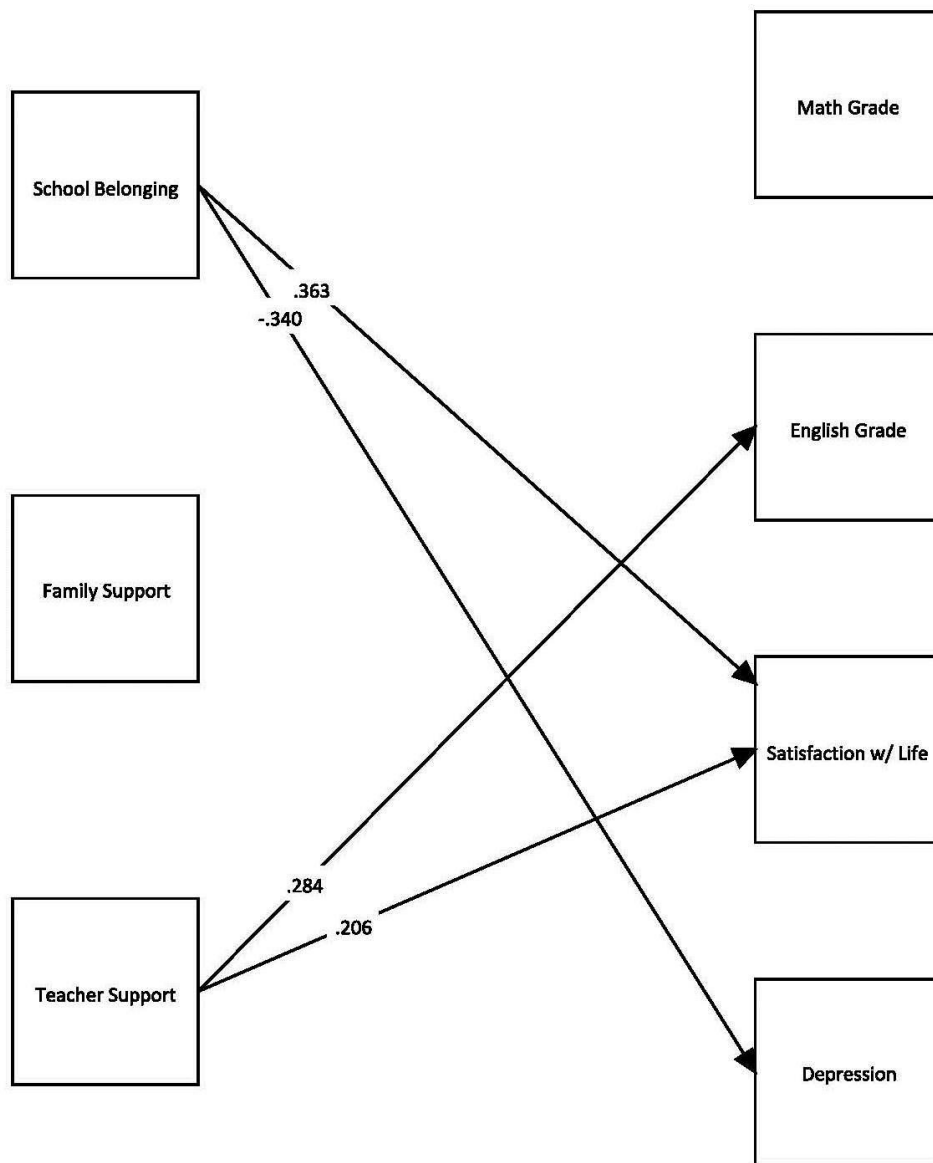


Table 3.5 *Path Analysis Results for Factors Associated with Social Support in Predicting English Grade, Math Grade, Satisfaction With Life, and Depressive Symptoms for a Sample of Foreign-born adolescents to British Columbia*

|                         | Estimate | SE    | Estimate/SE | R <sup>2</sup> |
|-------------------------|----------|-------|-------------|----------------|
| English Grade ON        |          |       |             | .09            |
| Teacher Support         | 0.284    | 0.114 | 2.49**      |                |
| Family Support          | -0.221   | 0.134 | -1.654      |                |
| School Belonging        | 0.049    | 0.098 | 0.497       |                |
| Math Grade ON           |          |       |             | .01            |
| Teacher Support         | -0.046   | 0.092 | -0.499      |                |
| Family Support          | 0.057    | 0.105 | 0.537       |                |
| School Belonging        | -0.038   | 0.086 | -0.442      |                |
| Satisfaction W/ Life ON |          |       |             | .23***         |
| Teacher Support         | 0.207    | 0.075 | 2.769**     |                |
| Family Support          | 0.067    | 0.078 | 0.863       |                |
| School Belonging        | 0.362    | 0.069 | 5.266***    |                |
| Depressive Symptoms ON  |          |       |             | .14**          |
| Teacher Support         | -0.092   | 0.081 | -1.139      |                |
| Family Support          | -0.026   | 0.082 | -0.317      |                |
| School Belonging        | -0.339   | 0.073 | -4.649***   |                |

*Note.* Estimates based on STDYX standardization.

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



*Figure 3.4.* A path analysis illustration of social support factors in predicting English Grade, Math Grade, Satisfaction With Life, and Depressive Symptoms for a sample of foreign-born adolescents to Canada ( $N=184$ ). Only statistically significant path estimates are illustrated ( $p < .01$ ). Depression = Depressive Symptoms.

### **3.4 Discussion**

A number of factors associated with academic attitudes, cultural orientation, and social support were identified in the current study to be statistically predictive of academic achievement and psychological well-being for young people who migrate to BC. A range of assets were identified as associated with satisfaction with life, lower depressive symptoms, and math grade. A smaller list of predictors emerged as risks (i.e., negatively associated with satisfaction with life and grades but positively associated with depressive symptoms). Teacher support at school was the only significant predictor of English grade for the current sample. The factors in the academic attitudes, cultural orientation, and social support models are subsequently discussed.

#### **3.4.1 Academic Attitudes**

*“I think nowadays students when they come to school, they aren't really study for the knowledges, they often study materials because they worry that they aren't getting a high mark to apply for university”* (study participant)

Academic self-efficacy was found to significantly contribute to both academic and psychological outcomes for the foreign-born adolescents in the sample – high academic self-efficacy was predictive of math grade and satisfaction with life, whereas low academic self-efficacy was predictive of depressive symptoms. Based on these findings we can say that a sense of academic self-efficacy, or students’ beliefs in their ability to be successful in their schoolwork, emerged as an asset in the psychological and math achievement domains of functioning for this sample of foreign-born adolescents in BC. The role of academic self-efficacy in the prediction of math achievement was expected. Students with high academic self-efficacy have been found to have higher levels of academic achievement in a variety of domains (e.g., Pajares, 1996). This is

thought to be due to the fact that individuals who hold the belief that they can achieve in a given area are more likely to engage and persist in the face of challenge, and ultimately succeed (Bandura, 1997, Wigfield & Cambria, 2010). In the specific case of math achievement, Pajares and Kranzler (1995) found that self-efficacy related to math achievement was equal to mental ability in the prediction of math achievement (Schunk & Pajares, 2002).

Although academic self-efficacy emerged as significantly predictive of math achievement, this significant relationship was not found for English achievement, which was unexpected. One explanation is that self-efficacy is thought to be a task-specific construct (Schunk & Pajares, 2002) and while the current study does capture *academic* self-efficacy, further subject-specific construct delineation (i.e., English vs. math) may have been beneficial in understanding to a greater depth the relationship between academic self-efficacy and academic achievement. This may be a particularly useful strategy in the case of the students in the current sample, foreign-born adolescents, who are all English Language Learners. As previously characterized, the students sampled can have highly discrepant English and math grades and it may be the case that their English and math self-efficacy may also be distinct. Future research, particularly with ELL students, would benefit by taking into account this added complexity and obtaining more refined reports of academic self-efficacy that distinguish between English and other subject areas.

Beyond math achievement, higher academic self-efficacy was associated with higher satisfaction with life as well as fewer depressive symptoms. This finding was also expected based upon the body of work by Bandura and colleagues indicating that self-efficacy beliefs are thought to protect children and adolescents against negative outcomes such as depression and lead to positive outcomes, such as well-being (Bandura, 1997; Bandura, Barbaranelli, Caprara, &

Pastorelli, 1996). Bandura (1997) argues that depression is a likely outcome for individuals with low self-efficacy placed in a context, such as schools, in which they must meet highly valued standards (personally- or externally-set standards). This argument resonates in the case of young people who migrate who often report a great sense of pressure to succeed academically (Ang et al., 2009). Given that academic self-efficacy was positively predictive of both academic and psychological domains of functioning in the current sample of foreign-born adolescents, academic self-efficacy should be considered an important asset to be cultivated in young people who migrate. There is some evidence to indicate that instructional programs that hinge on providing feedback that helps students to see their capabilities and progress are effective in bolstering academic self-efficacy (Schunk & Pajares, 2002).

Academic self-expectations stress was also significantly predictive of satisfaction with life and depressive symptoms in the expected directions – high stress was associated with low satisfaction with life and more depressive symptoms, meaning it is a risk factor in the domain of psychological well-being. Evidence thus far points to an increased incidence of academic expectations stress for students of Asian descent, in comparison to other ethnic groups (Ang, Huan, & Braman, 2007). Academic expectations stress is often theoretically attributed to certain cultural norms across Asian cultures, such as collectivism and filial piety, which are grounded in the notion that achieving success for the sake of family or significant others is of utmost importance (Ang et al., 2007). Furthermore, there is some evidence to indicate that students, of Asian descent in particular, are likely to perceive that they are unable to attain their own academic expectations (Ang et al., 2009). On top of cultural expectations, it is also relatively well-documented that students who migrate to a new country face increased pressure to succeed academically (Ang et al., 2009). Taken together, it is not surprising that academic self-

expectation stress perceived by the study participants were sufficient to significantly predict negative psychological outcomes in the study (i.e., lower satisfaction with life and more depressive symptoms). The role of academic self-expectation stress as a risk factor in the current study makes it important to find ways to help young people who migrate manage their stress associated with academic self-expectations.

Three of the achievement goal orientations were found to be associated with the study outcomes in a number of ways. A mastery-approach orientation was found to be significantly associated with psychological well-being (positively with satisfaction with life, negatively with depressive symptoms) and as such, can be considered an asset in the psychological well-being domain. Indeed, there is consistent theory and evidence for the association of a mastery-approach orientation with a broad range of positive outcomes, mostly pertaining to learning but also related to positive emotion (Senko et al., 2011). Importantly, no significant relationship was found for the study sample between a mastery-approach orientation and academic achievement. While perhaps counter-intuitive theoretically, it does correspond with a growing body of work similarly reporting no direct link between achievement and a mastery-approach orientation (Hulleman, Schrager, Bodmann, & Harackiewicz, 2010; Senko, et al., 2011). It is however important to highlight two points. First, a mastery-approach orientation is consistently associated with a whole range of favorable learning strategies, such as task engagement and cognitive strategies (Wigfield & Cambria, 2010) and there is some evidence to indicate that a mastery-approach orientation can promote achievement indirectly through these achievement-related behaviors (Senko, et al., 2011). Second, the results of the current study demonstrate the psychological value of a mastery-approach orientation. More research is needed that takes into account the role of achievement goal orientations for outcomes outside of the realm of learning

and achievement. These results provide evidence to indicate that mastery-goal orientations may have benefits for psychological well-being and that, given the centrality of school and academic work in the lives of adolescents, this is an important metric in and of itself.

Whether or not a performance-approach orientation should be considered to promote or hinder favorable outcomes is a point of theoretical controversy and mixed research findings (Senko, et al., 2011). There is however, evidence to indicate that a performance-approach orientation is associated with a variety of positive learning behaviours and academic performance (Elliot & Murayama, 2008; Wigfield & Cambria, 2010). The pattern of mixed findings in the literature was echoed in the current study: A performance-approach orientation emerged in the study as both an asset and risk, depending on the domain of interest. A performance-approach orientation was positively associated with math achievement but it was also positively associated with depressive symptoms, resulting in discrepant outcomes (a positive achievement-related outcome but a negative psychological outcome). This finding serves to emphasize the importance of looking from a broader perspective at the role of achievement goal orientations and raises an important issue for young people who migrate in particular – there is growing concern amongst researchers that the high levels of achievement routinely reported for young people who migrate may come at a social-emotional cost (Qin et al., 2008; Zhou et al., 2003). The findings presented provide an opportunity to highlight an important point – achievement itself is not likely to come at a psychological cost but it is the mechanisms underlying that achievement (for example, achievement goal-orientations) which may have an impact. In the case of the present sample of foreign-born adolescents, those adopting a performance-approach orientation were likely to report higher math achievement, but they were also likely to report more depressive symptoms. In contrast with a performance-approach

orientation, a performance-avoidance orientation was predictive of lower math achievement. This finding is in keeping with past research that typically associates this goal orientation with a range of negative learning behaviors (e.g., disorganized study habits and help-avoidance) and lower achievement (Senko, et al., 2011).

Indeed, the findings presented here illustrate the notion that for foreign-born adolescents in BC, attitudes towards their academics are not only associated with their academic achievement, but also with their psychological well-being. The study results provide an opportunity to highlight the role of academic attitudes (i.e., self-efficacy, expectation stress, goal orientations) with these broader outcomes and implications in mind. Academic self-efficacy, for example, has emerged as an important asset in the prediction of both academic achievement and psychological well-being for the foreign-born adolescents in the sample. A mastery-approach goal orientation was found to function as an asset in the psychological well-being for the study sample, but interestingly did not play a role in academic achievement. By contrast, academic self-expectation stress emerged as a risk factor as it was associated with lower psychological well-being for the foreign-born adolescents in the sample. The fact that performance-approach emerged as an asset in the prediction of academic achievement but a risk factor in terms of psychological well-being is a testament to the importance of considering multiple domains of positive adaptation for foreign-born adolescents. Importantly, we need to tread carefully in our positive estimation of performance-approach because of its association with academic achievement, as this orientation is also coupled with negative psychological outcomes (i.e., depressive symptoms).



### 3.4.2 Cultural Orientation

*“I want to be a good Chinese and Canadian.”* (study participant)

Heritage culture maintenance, Canadian culture participation, and biculturalism were all found to act as assets in the positive adaptation of foreign-born adolescents in the sample, but interestingly, they were found to play different roles. Canadian culture participation was predictive of fewer depressive symptoms. Foreign-born adolescents are tasked with having to rebuild their social networks in the host country (Tsai, 2006), a time when the peer context is known to be central in their lives (Bronfenbrenner, 1979; Brown & Klute, 2006). Oftentimes, barriers, such as proficiency in the host language, result in less participation or engagement in the culture of the majority (i.e., Canadian mainstream culture), which in turn leads to more limited social networks from which to draw peer and other types of social support (Tsai, 2006). Indeed, perceived similarity can play a substantial role in friendship choices during adolescence (Bellmore, Nishina, Witkow, Graham, & Juvonen, 2007) and there is some indication that those who migrate will select friends who speak their native language as a way to protect their psychological well-being (Tatum, 1999). The findings of the current study would suggest that, in fact, this strategy may be counter-productive considering that lower Canadian cultural participation was associated with lower psychological well-being (i.e., depressive symptoms).

While Canadian culture participation alone negatively predicted depressive symptoms in the sample, biculturalism (i.e., Canadian and heritage culture) emerged as positively predictive of satisfaction with life. Upon further examination of the interaction between Canadian culture participation and heritage culture maintenance, it became clear that Canadian culture participation was associated with the highest mean levels of satisfaction with life for the study

participants. In contrast, low levels of heritage culture maintenance led to the lowest levels of satisfaction with life. Importantly, the strength of the relationships between satisfaction with life and Canadian culture participation and heritage culture maintenance were different based on low, medium, and high reports. Increasing heritage culture maintenance was associated with greater gains in satisfaction with life at lower levels of heritage culture maintenance, but there was no evidence of further gains in satisfaction with life once participants reached a medium level of heritage cultural maintenance. In contrast, Canadian culture participation seemed to have a stable relationship with satisfaction with life at low levels, but this relationship emerged as stronger at higher levels of Canadian culture participation. That is to say, Canadian culture participation seems to have little effect on satisfaction with life in low doses but participants seemed to have a disproportionate gain in satisfaction with life when they reported high levels.

The opposite relationship emerged for heritage culture maintenance – reports of heritage culture maintenance played a large role in increasing satisfaction with life at lower doses, but after a point, any further gains in heritage culture maintenance were not met by gains in satisfaction with life. A biculturalism line was also plotted to represent those reporting low, medium, and high levels of both Canadian culture participation in tangent with heritage culture maintenance to determine whether there would be evidence for a synergistic relationship – that is, if biculturalism would have a stronger association with satisfaction with life than the sum of Canadian culture participation and heritage culture maintenance, individually. Evidently, increasing biculturalism was associated with a more consistent increase in satisfaction with life, but there was no evidence for a synergistic relationship. Indeed, the positive association between biculturalism and satisfaction with life was expected, based on past research suggesting that individuals can develop and engage in two cultures (LaFromboise et al., 1993) and that this is

associated with a range of positive mental health outcomes (Benet-Martinez & Haritatos, 2005; Phinney & Ong, 2007; Portes & Rumbaut, 2001). The present study corroborates this assertion – both heritage culture maintenance and Canadian culture participation are important assets and it is together (i.e., biculturalism) that they are likely to play their strongest role in the lives of young people who migrate.

In interpreting the findings related to cultural orientation, it is imperative that we bear in mind the sample under consideration – as those who migrate to Canada, they may be still be navigating their Canadian and heritage cultural worlds. While there is evidence that acculturation stabilizes in early adolescence (Reitz, Motti-Stefanidi, & Assendorpf, 2014), the recently arrived adolescents in the current sample are not likely to have reached this level of stability as they begin to find ways to best adapt to life in Canada. The strong relationship between Canadian culture participation and psychological well-being in the current study may be an attestation to the importance of feeling positive and engaged in Canadian culture as a recent newcomer to Canada. This relationship may begin to look different the longer one spends in the host country. Further research that disentangles the temporal relationship between cultural orientations and well-being would be a helpful next step in understanding the cultural adaptation processes for those who migrate to Canada.

### **3.4.3 Social Support**

*“I feel much more grown up than kids in my age, but sometimes I feel lonely.”* (study participant)

School belonging emerged as a significant predictor of both higher satisfaction with life and fewer depressive symptoms. This finding was expected given the large body of evidence pointing to the foundational importance of belonging to a community (Baumeister & Leary,

1995; Maehr & Midgley, 1996; Osterman, 2000). We know that a sense of belonging leads to a whole host of positive psychological outcomes, such as happiness and contentment (Osterman, 2000) and also provides a foundation for learning and positive functioning (Baumeister & Leary, 1995; Maehr & Midgley, 1996; Ryan, 1995). Loneliness and isolation at school have been found to be associated with a range of detrimental academic and psychological outcomes, such as depression, anxiety, and early school withdrawal (McDougall et al., 2001). This has notable implications for the present sample of young people who migrate, given that 58.2% reported a sense of school belonging that was somewhat neutral (i.e., neither agree nor disagree) or lower. Indeed, adolescents who are undergoing a period of stress or transition are thought to be particularly vulnerable to school maladjustment (Eccles & Midgley, 1989) and there is more recent evidence to suggest that foreign-born adolescents may in fact be more strongly impacted by their school context than those who are native born (Gagné et al., 2012).

Based on the results here, it is imperative that we find ways to bolster a sense of school belonging for foreign-born adolescents. Previous work would suggest that young people who migrate are more likely to feel a sense of school belonging when they perceive that they have peer and adults at school who can provide them with *emotional* support (i.e., people they can go to for support when they are feeling mad, sad, or stressed; Gagné et al., 2012). School staff and administrators who are interested in finding ways to increase the sense of school belonging for young people who migrate might begin by looking to the ways in which they might foster emotionally supportive adult and peer relationships for young people who migrate in the school environment.

Perceptions of teacher support at school were positively predictive of English grade as well as satisfaction with life. Teacher support is known to play a key role in both academic as

well as social and emotional outcomes (Furman & Buhrmester, 1992) and the role of teachers has been found to be even more pronounced in the lives of young people who migrate, in comparison to their native born peers (Gagné et al., 2012; 2014; Vedder, Boekarts, & Seegers, 2005). Teacher support has even been found to play a more prominent role than peer support for adolescents who immigrate, at least for support that is school-related (Morrison, Laughlin, San Miguel, Smith, & Widaman, 1997). Young people who migrate are likely to have a particularly strong reliance on teachers in facilitating their progress and success in English because parents may be less likely to have the English language skills and knowledge of the school system required to provide instructional support (Vedder et al., 2005).

Surprisingly, family support did not emerge as significantly associated with academic achievement or psychological well-being in the current study. It is important to emphasize that in the current sample, some of the participants reported not living with parents or even family members (e.g., some students reported living with host or homestay families in Canada). This may help to explain why family support did not play a role in the current study – given that family may have less of an impact on their day-to-day lives. Given the role of teacher support in the study, it may be the case for these particular adolescents that teachers may play a special adult role in their lives.

#### **3.4.4 Strengths, Limitations, and Future Directions**

The study findings presented here should be contextualized in terms of the study strengths and weaknesses. The study sample provides a rare look at foreign-born adolescents in the early stages of their lives in Canada – with the average participant arriving less than two years prior to participating in the study. Capturing those who migrate is particularly important – having newly arrived in Canada, they are at a stage of their adaptation process when the

particular assets they hold and the risks they face may be incredibly impactful and critical to their positive adaptation. With that however, it is also necessary to remind the reader that the sample size was relatively small and culturally homogenous, and it was also a sample of convenience. While the findings provide some initial indication of the assets and risks relevant to foreign-born adolescents, the results will require replication with larger, random or population-based samples prior to claims of generalizability can be made.

In addition to this, it is also important to keep in mind that the study utilized cross-sectional data and the positive associations and statistical predictions of academic achievement and psychological well-being should not be interpreted as causal without further longitudinal work providing concrete evidence for a causal relationship. Longitudinal studies of a similar nature are also recommended in order to begin to capture the temporal nature of the adaptation process – assets and risks that emerge as important predictors in the first few years of landing in a new country may change over time, as needs change.

It is also important to note that the sample size played a restrictive role statistically-speaking, which therefore theoretically restricted the models that could be tested in the study. For example, due to statistical power limitations, the academic attitudes, cultural orientation, and social support adaptation factors were run as separate models. Ideally, these three groups of factors would be tested simultaneously in order to begin to understand the interactions between the groups – recognizing that each group of factors does not operate in isolation but as part of the larger adaptation system impacting the outcomes (academic and psychological) of foreign-born adolescents.

With that said, the study offers a number of important insights. The study took a broad conceptualization of positive adaptation for adolescents and the findings presented here reiterate

the need to look across a range of domains of functioning to appropriately assess the positive adaptation of foreign-born adolescents. An example from the present study illustrates this assertion: A performance-approach achievement goal orientation would have been defined as purely an asset to the positive adaptation of foreign-born adolescents if psychological well-being had not also been considered.

The study allowed us to highlight some salient factors that would not be a standard consideration in a study with a focus on a general population sample (e.g., biculturalism, academic expectation stress). For example, the role of academic self-expectation stress emerged as an important risk factor and one that should be recognized and highlighted for those practitioners and educators working with foreign-born adolescents in BC. Indeed, the present study provides an important step in mapping potential assets and risks for adolescents who are new to BC.

## Chapter 4: Conclusion

The aim of this dissertation was to develop a more complex understanding of the variations in the academic achievement and well-being of foreign-born adolescents as well as migration and adaptation factors that predict these variations. Two studies were conducted in order to meet this aim. Study 1, utilizing administrative records to look retrospectively at a population-based cohort of foreign-born adolescents in BC over the course of their high school years (Grades 10-12), provided evidence for this complexity by identifying multiple academic achievement and mental health service utilization pathways over the course of high school. Importantly, Study 1 further identified factors proximal to migration experiences that acted as assets and risks in predicting the varied academic achievement and MSP-reimbursed mental health service utilization trajectories. Additionally, Study 1 was able to explore the relationship between the academic achievement and MSP-reimbursed mental health service utilization trajectories of foreign-born adolescents in BC, where trajectory groups characterized by high academic achievement were found to be associated with lower membership in the higher MSP-reimbursed mental health service utilization trajectory groups. Study 2 utilized a researcher-collected sample of foreign-born adolescents in BC and identified a number of adaptation factors (assets and risks associated with academic attitudes, cultural orientation, and social support) that were predictive of both academic achievement and psychological well-being.

The two studies together offer unique and complementary insights into migration experiences of adolescents in BC. Study 1, utilizing administrative data, rendered it possible to capture virtually the entire population of foreign-born adolescents who were in Grade 10 in the 2010/11 or 2011/12 school years, which greatly enhanced the generalizability of the results. Also, the large sample afforded the opportunity to explore very complex statistical models. On



the other hand, the data used in Study 1 was originally collected by the Ministry of Education, the Ministry of Health, and Citizenship & Immigration Canada, respectively, for administrative purposes within these organizations. As a result of this, the data was not ideal in some cases. For example, the findings would have been enhanced if we could have accounted for Canadian-born adolescents who had foreign-born parents or grandparents, thereby enabling us to distinguish native-born students based on whether they were second- or third-generation Canadians (and beyond). Similarly, the findings would have been much stronger if we had access to measures of mental health beyond MSP-reimbursed mental health service utilization which would allow for a deeper understanding of the mental health status of the population.

Fortunately, Study 2, which was comprised of a much smaller sample of foreign-born Canadians ( $N=184$ ), did include a much wider range of factors that are specific to adaptation experiences, including self-reported indicators of psychological well-being (e.g., satisfaction with life). This allowed for a richer, more specific understanding of the factors associated with adaptation for foreign-born adolescents, however, the small sample size limited our ability to examine complex models, and in contrast to Study 1, the data were cross-sectional and so did not give any insight into how these risks and assets manifested over time.

Regardless, these two studies, in conjunction, represent one of the most thorough investigations into the variations in experiences of foreign-born adolescents in BC, thereby answering important questions, but also pointing the direction for future research.

**Modifiable and un-modifiable risk factors.** In addition to methodology, each of the studies looked at factors of a different nature. For example, Study 1 focused almost exclusively on identifying migration factors (assets and risks) that are fixed within an individual, such as age, sex, age of arrival, migration class, and country of birth. In contrast, Study 2 focused on

modifiable factors of the adaptation process that are more readily impacted by the receiving context, namely, academic attitudes (academic self-efficacy, academic behavioural investment, academic self-expectation stress, academic parent-expectation stress, and mastery-approach, mastery-avoidance, performance-approach, performance avoidance goal orientations), cultural orientation (heritage culture maintenance, mainstream culture participation, biculturalism, and perceived racial/ethnic discrimination), and social support (school belonging, teacher support, peer support, and family support). In the case of both Study 1 and Study 2 factors, important insights can be gained but the findings must be discussed and interpreted in different ways.

For Study 1, it is recognized that the risk factors measured cannot generally be altered. For example, we cannot easily alter an individual's age of arrival in Canada. We can however, work on changing the experience of such risk – so for example, knowing that there are increased maladaptive outcomes for older youth, we can implement targeted intervention and education programs to provide additional support and resources in order to mitigate the risks for this age-group. For Study 2, where risks and assets can be modified, an approach that directly modifies the risk (or asset) is appropriate. For example, in Study 2, low self-efficacy was identified as a risk for low math achievement. In response to this, the recommendations can involve interventions or other methods to alter exposure to the risk itself. As discussed in Chapter 3, there are ways in which those who migrate can be provided with feedback and instruction designed to bolster self-efficacy (i.e., acting to modify the risk). These approaches are in fact complimentary as we gain knowledge and understanding of how to improve the academic and psychological outcomes for foreign-born adolescents through two methods: Altering the experience of risks that cannot be changed and altering the exposure to risks than can be changed.

**Multiple domains of functioning.** A thread that was common to both studies was the inter-connectedness of the academic and psychological/mental health domains. This was revealed most notably in Study 1 as the dual trajectory model (Figure 6) illustrated a striking pattern of negative association in the relationship between academic achievement and MSP-reimbursed mental health service utilization. Although, as mental health service utilization alone does not equate to mental health for a number of reasons already discussed, the findings in Study 2 do corroborate the Study 1 findings to a large extent. In Study 2, academic achievement (math and English) was significantly associated with higher satisfaction with life and lower depressive symptoms. Delving deeper into this relationship, Study 2 revealed how foreign-born adolescents' attitudes and feelings towards school and academic achievement (for example, academic self-expectations stress and academic self-efficacy) were predictive of their psychological well-being.

Taken together, it is clear that the adaptation of foreign-born adolescents cannot be accounted for by way of a singular domain of functioning and, in the case of academic achievement and psychological well-being at least, they are highly inter-related. Although neither study is able to make claims regarding the directionality of these relationships, the findings from the present studies indicate that the field will benefit from research that begins to investigate the relationships across multiple domains of functioning for foreign-born adolescents. This should be considered as an important area of growth for researchers studying the impact of migration on adolescent development.

**Mental health in foreign-born adolescents.** Mental health was approached from two different perspectives in Study 1 and Study 2. The results yielded by these different approaches provide impetus for future research that combines the two perspectives. As previously discussed, Study 1 accounted for differences in MSP-reimbursed mental health service utilization (not

mental health); whereas Study 2 accounted for self-reported indicators of psychological well-being. In essence, the studies viewed mental health experiences from two different lenses. Study 1 measured mental health services and therefore was almost certainly capturing more severe mental health issues that required the assistance of mental health professionals. The limitation of viewing this as an indicator of mental health (in addition to those already noted) is that it does not have the ability to differentiate at the positive end of the spectrum. That is to say, it cannot distinguish those who are functioning (psychologically-speaking) and those who are thriving. Study 2, on the other hand, was able to capture these more subtle differences in positive adaptation.

Future research would benefit from a combined approach to measuring mental health. A study that simultaneously gathered information on mental health service utilization along with other indicators of mental health would help to provide a more holistic understanding of the mental health of foreign-born adolescents in BC. Data on mental health service utilization would be complemented by self-reported mental health data (as in Study 2) but researchers are also recognizing that we have the opportunity to further unpack findings associated with the immigrant paradox with the availability of newer strategies, such as the collection of biomarkers (e.g., cortisol collected from saliva; Crosnoe & Fuligni, 2012). In the case of those who migrate, biomarkers may be particularly insightful as they may help to reduce linguistic and cultural data collection challenges. Indeed, as illustrated by Study 1 and 2, there is a need to combine approaches to data collection, particularly in the measurement of mental health. This is another important line of research that has the potential to clarify the mixed findings found in the mental health realm for foreign-born adolescents.

**The upside of migration.** One of the strengths of the current study was the attention paid to the positive aspects associated with migration. In general, this research was approached from a positive perspective, with an attempt to move away from a purely deficit-based approach to understanding outcomes to a more balanced approach (Seligman & Csikszentmihalyi, 2000) by making an effort to capture positive outcomes (e.g., satisfaction with life) as well as assets (e.g., academic self-efficacy) associated with migration experiences. This has been noted as an important direction for the study of migration on development in recent years (Marks et al., 2014; Zhou et al., 2012) and was a strength of the current work. The fact that the valence of migration itself may take many forms, depending on the circumstances and perspectives associated with migration, is often overlooked. The current study made a theoretical point of removing the valence from migration altogether (it was not positioned as a risk or an asset in the studies) and made sure to include a variety of assets and risks to ensure a balanced approach.

Study 1 and 2 together yielded a host of assets that predicted positive adaptation in the lives of foreign-born adolescents. For example, Study 1 helped to identify a group profile of young people who migrate (females, who are economic class immigrants, and who arrived early in life) who show remarkably positive adaptation over their high school years. Building on this, Study 2 identified a number of assets that were positively associated with academic achievement and psychological well-being for young people who migrate, namely academic self-efficacy, biculturalism, and a mastery approach achievement goal orientation. Studies of this nature help to move away from a problem-based, deficit approach that is common in research on adolescent development (Seligman and Csikszentmihalyi, 2000) and in particular for research on migration and minority populations (Garcia Coll et al., 1996; Marks et al., 2014).

#### **4.1 Practical Study Applications**

While many avenues for further investigation have been opened, Study 1 and 2 findings have practical implications for educators, parents, and policy-makers, alike. For example, the findings from Study 1 provide a very concrete list of factors, and most notably combinations of factors, that predict those who are most likely to struggle academically and those who are most likely to thrive. These have direct policy implications for schools, particularly in the province of BC. Study 1 provides compelling evidence to indicate that adolescents who arrive in Canada in their adolescent years, who are English language learners, and who are older than average at school may struggle to succeed. As such, school programs aimed specifically at foreign-born students with these particular qualities need to ensure that students are receiving support and instruction that is in line with their unique needs and developmental stage.

Similarly, from Study 2, many of the factors emerged as significantly predictive of academic achievement and psychological well-being, which provide direction for educators in the creation of interventions and tools to support foreign-born adolescents in developing positive coping strategies and attitudes towards academics. For instance, with the knowledge that foreign-born adolescents may be apt to stress associated with high academic self-expectations, parents, teachers, and practitioners can work to help adolescents mitigate and manage this stress early on in their academic careers in Canada. As another example, Study 2 found that school belonging was predictive of higher satisfaction with life and lower depressive symptoms. Additionally, reports of teacher support were predictive of satisfaction with life and English grades. With this knowledge, schools may investigate whether or not they are structured in a manner that appropriately welcomes and integrates foreign-born adolescents into the school community.

## **4.2 Limitations, Strengths, and Future Directions**

The two studies presented here offer different but complementary responses to identifying factors in the academic achievement and psychological well-being of foreign-born adolescents. As discussed, each study has strengths and weaknesses to contribute: Study 1 offers a longitudinal perspective and greater potential for generalizability. Study 2 offers a more refined indication of psychological well-being and a broader range of modifiable risk factors. Perhaps the greatest limitation of the current dissertation is that the data collected in Study 1 and Study 2 could not be combined. One unified study with the ability to capture the inherent strengths of both studies would have provided explanations for some of the unanswered questions associated with the findings in the respective studies. It would also have allowed for a richer understanding of the impact of the study factors on the outcomes. For example, having had the ability to account for the Study 1 and 2 factors together, it would have been possible to investigate the moderating (i.e., protective or vulnerability) role of the Study 2 factors (e.g., self-efficacy, school belonging, and teacher support) on the risks and assets identified in Study 1. Understanding the relationships between the factors identified in Study 1 and Study 2 will help to explicate the deeper complexity of migration and adaptation experiences that was not possible to do in the current work.

Over one-third of Canadians are foreign-born (Citizenship & Immigration Canada, 2014a). This number does not include those who have parents, grand-parents, husbands, wives or children who are foreign-born. Indeed, migration may be one of the most unifying experiences in countries that are characterized by their diversity and a strong history of immigration, such as Canada. Yet, the impact of migration on child and adolescent development continues to be treated as a special interest research topic. It has long been argued that we only truly capture the

process of development more broadly by gaining an understanding of the processes that deviate from the norm (Cicchetti & Cohen, 1995). Indeed, the lessons learned in the study of migration and the immigrant paradox can be fruitful theoretically for the field of development more generally (Crosnoe & Fuligni, 2012). Understanding the role of migration on adolescent development provides us with greater culturally and contextually nuanced insight into the field as a whole. One of the most important future directions in conducting research on the impact of migration on adolescent development is to continue to find ways to integrate ‘special interest’ knowledge (e.g., knowledge on immigration and diversity) into our fundamental understanding of adolescent development.



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## Appendix A : Linkage Strategy

### Population Data BC - LINKAGE STRATEGY

Project Number: 14-080

Applicant: Gagné

Title: Explaining the academic achievement and well-being of adolescent immigrants, refugees, and nonimmigrants in Canada

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#### Cohort:

The Part 1 study population will first be defined by Ministry of Education data (via Edudata) as follows: All BC students who were in their Grade 10 year in the 2010/11 and 2011/12 school years. Population Data BC will further refine the study population to identify:

- 1) those who migrate to Canada (i.e., the students who have a record in the CIC data file)
- 2) a random sample of nonimmigrants (i.e., students with no CIC record), based on a 2:1 ratio of nonimmigrants vs. those who migrate to Canada.

\*Note: The researchers will only be provided with data for the Part 1 study population, as refined by Population Data BC above.

The Part 2 researcher-collected sample will be defined by researcher-collected data as follows: BC students between the ages of 13 and 18 (i.e., grade 8-12; defined by researcher-collected data). No data linkage or data extracts required for the Part 2 sample.

#### Part 1 Study Population Defined by Ministry of Education and Population Data BC

- Step 1: The Ministry of Education (via Edudata) creates the initial study population. Using the appropriate Secure File Transfer Site Edudata provides PopData with an electronic data file, consisting of **Edudata IDs**.
- Step 2: PopData creates the refined study population for the approved project and associates Edudata IDs and PopData IDs to a **final study ID**.
- Step 3: PopData prepares and provides the RESEARCHER the CIC and MOH Research Extract on the SRE. The Research Extract will only contain the fields that have been approved by the Ministry of Health, Citizenship and Immigration Canada, and the Ministry of Education to be released for the analysis with a **final study ID** attached to each record.

*PopData sends a copy of the researchers' data letter to Ministry of Health, Citizenship and Immigration Canada, and the Ministry of Education for reference.*



- Step 4: PopData sends an Edudata ID-to-**final study ID** cross reference file to Edudata and notifies them to proceed with data preparation of the Ministry of Education Research Extract.
- Step 5: Edudata prepares the approved set of data (Research Extract), removes Edudata IDs and assigns the **final study ID**. The Research Extract is provided by Edudata to PopData using the appropriate Secure File Transfer Site.
- Edudata (Ministry of Education) also provides confirmation to PopData that the Research Extract only contains fields that have been approved for analysis. Popdata provides this confirmation to the Ministry of Health, Citizenship and Immigration Canada.*
- Step 6: The Research Extract from the Ministry of Education (Edudata) is uploaded by PopData to the SRE. The Research Extract provided to the RESEARCHER on the SRE will only contain the fields that have been approved to be released for the analysis and the **final study ID**.
- Step 7: RESEARCHER links the Research Extracts provided by Population Data BC and the Ministry of Education (Edudata) via the **final study ID** to carry out their analyses on the SRE.
- Note: Where researchers use the SRE, there will be an additional signed agreement with the Ministry of Education for housing the content data for this project only on the SRE, and all data delivery will be to the Researcher through the SRE.*

## Academic and social-emotional success at school

### *Questionnaire for adolescents*

The information you give us about your experiences is very important in helping to find the best ways for schools and the community to support you.

**Some important things to remember:**

- **ONLY write your name on the last page of this questionnaire.** Before you hand in your survey, pull your name page off and put it in the envelope at the front of the room. DO NOT write your name on any other pages because we want your answers to be private.
- **This survey is voluntary.** You only participate if you want. At any time, you can decide to stop and you will not be penalized for any way for this decision. Whether or not you answer the questions will not affect your grades in this class
- **This is NOT a test.** Try to answer as truthfully as you can. Your parents, teachers, or others at your school will not see your responses.
- Read the instructions and questions carefully. **If you do not understand, please raise your hand and someone will help you.**
- If you are not comfortable answering a question, then just leave it blank.

*THANK YOU VERY MUCH FOR YOUR HELP!*



SECTION 1: TELL US ABOUT YOURSELF

1. Are you a boy or a girl? \_\_\_\_
  2. What grade are you in? \_\_\_\_
  3. What is your birthday? Day\_\_\_\_\_Month\_\_\_\_\_Year\_\_\_\_\_
  4. What is your ethnic background? (please check only one - the most meaningful one to you)
    - ☐ Aboriginal origins (e.g., First Nations, Inuit, Metis)
    - ☐ South Asian origins (e.g., East Indian, Sri Lankan, Pakistani)
    - ☐ East Asian origins (e.g., Chinese, Japanese, Korean)
    - ☐ Southeast Asian origins (e.g., Filipino, Thai, Vietnamese, Malaysian)
    - ☐ West Asian (e.g., Iranian, Afghan)
    - ☐ European descent (e.g., Caucasian)
    - ☐ I don't know
    - ☐ Other (please list):
  5. What country were you born in? \_\_\_\_\_
  6. Were your parents/guardians born in Canada?
    - ☐ Yes, both of them
    - ☐ Yes, one of them
    - ☐ No, none of them
    - ☐ I don't know
  7. IF your parents/guardians were not born in Canada, what country were they born in?  
\_\_\_\_\_
- \*\*\*If you were born in Canada, skip to question 10.**
8. If you were not born in Canada, how long have you lived here?  
  
I have lived in Canada for \_\_\_\_\_ years.
  9. If you were born in another country, did you come to Canada as a (please check one):
    - \_\_\_ Immigrant (chose to come to Canada)
    - \_\_\_ Refugee (could not stay in your native country)
    - \_\_\_ International Student (studying in Canada)
    - \_\_\_ I don't know
  10. What language is spoken **the most** at home?

☐ English
 ☐ Other (please list)

11. Which of these adults do you live with MOST OF THE TIME?

(check all that you live with)

☐ Mother
 ☐ Father
 ☐ Stepfather
 ☐ Stepmother
 ☐ Grandmother
 ☐ Grandfather
 ☐ ½ time with mom, and ½ time with dad
 ☐ Foster parent(s)
 ☐ Other (please list):

12. What is the highest level of education you hope to get?

☐ High school diploma
 ☐ College diploma, technical certification, or other non-university training
 ☐ Bachelor’s degree (e.g. B.A., B.Ed., B.Sc.)
 ☐ Graduate or professional degree (e.g. PhD or M.D.)
 ☐ I don’t know

| 13. Fill in the boxes with a <b>NUMBER</b> . It is difficult to answer exactly, but make your best guess. | ...when you are mad, sad, or stressed? | ...for school help? | ...just to hang out? |
|---|--|---------------------|----------------------|
| 1.How many peers (friends or other people who are around your age) are you comfortable going to:          |  |                     |                      |
| 2.How many family members (e.g. mother, uncle, brother) are you comfortable going to:                     |  |                     |                      |
| 3.How many adults (not family) are you comfortable going to:  |  |                     |                      |

## SECTION 2: ABOUT ME AND MY FRIENDS

### Question 1

For each question, decide which sort of person you are more like – the one described on the right or the one described on the left. Then decide if that is “sort of true” or “really true” for you, and mark that choice. For each line mark only ONE of the four choices.

Example:

| Really True for Me |                          | Sort of True for Me      | SAMPLE   |     | Sort of True for Me                            | Really True for Me                  |                          |
|--------------------|--------------------------|--------------------------|--|-----|--|-------------------------------------|--------------------------|
| #.                 | <input type="checkbox"/> | <input type="checkbox"/> | Some people like to go to movies in their spare time | BUT | Other people would rather go to sports events. | <input checked="" type="checkbox"/> | <input type="checkbox"/> |

Pick **ONE** of the four  
choices on the side that is

|    | Really<br>True for<br>Me | Sort of<br>True for<br>Me |   |            |   | Sort of<br>True for<br>Me | Really<br>True for<br>Me |
|----|--------------------------|---------------------------|---|------------|---|---------------------------|--------------------------|
| 1. | <input type="checkbox"/> | <input type="checkbox"/>  | Some people are often disappointed with themselves          | <b>BUT</b> | Other people are pretty pleased with themselves           | <input type="checkbox"/>  | <input type="checkbox"/> |
| 2. | <input type="checkbox"/> | <input type="checkbox"/>  | Some people don't like the way they are leading their life. | <b>BUT</b> | Other people do like the way they are leading their life. | <input type="checkbox"/>  | <input type="checkbox"/> |
| 3. | <input type="checkbox"/> | <input type="checkbox"/>  | Some people are happy with themselves most of the time      | <b>BUT</b> | Some people can almost always figure out the answers      | <input type="checkbox"/>  | <input type="checkbox"/> |
| 4. | <input type="checkbox"/> | <input type="checkbox"/>  | Some people like the kind of person they are                | <b>BUT</b> | Other people wish they were someone else                  | <input type="checkbox"/>  | <input type="checkbox"/> |
| 5. | <input type="checkbox"/> | <input type="checkbox"/>  | Some people are very happy being the way they are           | <b>BUT</b> | Other people wish they were different                     | <input type="checkbox"/>  | <input type="checkbox"/> |

## Question 2

For each item, indicate how well it describes you by circling the appropriate number:

1=Does not describe me well  
5=Describes me very well

|  |   |   |   |   |   |
|--|---|---|---|---|---|
| 1. I sometimes find it difficult to see things from the "other guy's" point of view.                     | 1 | 2 | 3 | 4 | 5 |
| 2. I try to look at everybody's side of a disagreement before I make a decision.                         | 1 | 2 | 3 | 4 | 5 |
| 3. I sometimes try to understand my friends better by imagining how things look from their perspective.  | 1 | 2 | 3 | 4 | 5 |
| 4. If I'm sure I'm right about something, I don't waste much time listening to other people's arguments. | 1 | 2 | 3 | 4 | 5 |
| 5. I believe that there are two sides to every question and try to look at them both.                    | 1 | 2 | 3 | 4 | 5 |
| 6. When I'm upset at someone, I usually try to "put myself in his shoes" for a while.                    | 1 | 2 | 3 | 4 | 5 |
| 7. Before criticizing somebody, I try to imagine how I would feel if I were in their place.              | 1 | 2 | 3 | 4 | 5 |

## SECTION 3: SCHOOL

Question 1: My School - The following questions are about how you feel about school.

| Please indicate whether you agree with the following statements: | Strongly Disagree        | Disagree                 | Neither Disagree or Agree | Agree                    | Strongly Agree           |
|--|--------------------------|--------------------------|---------------------------|--------------------------|--------------------------|
| a. You feel close to people at school.                           | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>  | <input type="checkbox"/> | <input type="checkbox"/> |
| b. You feel like you are a part of your school.                  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>  | <input type="checkbox"/> | <input type="checkbox"/> |
| c. You are happy to be at school.                                | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>  | <input type="checkbox"/> | <input type="checkbox"/> |
| d. The teachers at your school treat students fairly.            | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>  | <input type="checkbox"/> | <input type="checkbox"/> |
| e. You feel safe at your school.                                 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>  | <input type="checkbox"/> | <input type="checkbox"/> |

## Question 2: My schoolwork

| Please tell us how true each of the following ideas are for you: | Not true                 | A little true            | Pretty true              | Very true                |
|--|--------------------------|--------------------------|--------------------------|--------------------------|
| 1. I can do even the hardest homework if I try.                  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 2. I can learn the things taught in school.                      | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 3. I can figure out difficult homework.                          | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

How much time do you spend on schoolwork outside of class on an average weekday?

I spend about  hours and  minutes doing schoolwork on a typical weekday.

How much time do you spend on schoolwork outside of class on an average weekend (a total for Saturday and Sunday)?

I spend about  hours and  minutes doing schoolwork on a typical weekend.

| In the following questions, indicate the extent to which each statement is true for you: | Never true               | Rarely true              | Sometimes true           | Often true               | Almost always true       |
|--|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| 1. I blame myself when I cannot live up to my parents' expectations of me.               | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 2. I feel I have disappointed my teacher when I do badly in school.                      | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 3. I feel I have disappointed my parents when I do poorly in school.                     | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 4. I feel stressed when I know my parents are disappointed in my exam grades.            | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 5. I feel lousy when I cannot live up to my teacher's expectations.                      | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 6. I feel stressed when I do not live up to my own standards.                            | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 7. When I fail to live up to my own expectations, I feel I am not good enough.           | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 8. I usually cannot sleep and worry when I cannot meet the goals I set for myself.       | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 9. When I do not do as well as I could have in an examination or test, I feel stressed.  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

**Question 3: My Grades**

What grades do you generally expect to receive in your classes (overall)?

|                          |                          |                          |                          |                          |                          |                          |
|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| I don't care             | Fail                     | D                        | C                        | B                        | A                        | A+                       |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

What grade do your parents/family members generally expect you to receive in your classes?

|                          |                          |                          |                          |                          |                          |                          |
|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| They don't care          | Fail                     | D                        | C                        | B                        | A                        | A+                       |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

What grade do your teachers generally expect you to receive in your classes?

|                          |                          |                          |                          |                          |                          |                          |
|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| They don't care          | Fail                     | D                        | C                        | B                        | A                        | A+                       |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

**Question 4: How I feel about grades**

| In the following questions, tell us (by circling) how much each statement is true for you:              |   |   |   |   |   |   |   |
|---|---|---|---|---|---|---|---|
| 1=Not at all True for me to 7=Very True for me  |   |   |   |   |   |   |   |
| 1. It is important for me to do better than other students.   | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 2. My fear of performing poorly in this class is often what motivates me.                               | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 3. I want to learn as much as possible from this class.   | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 4. My goal in this class is to avoid performing poorly.   | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 5. It is important for me to do well compared to others in this class.                                  | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 6. I worry that I may not learn all that I possibly could in this class.                                | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 7. I just want to avoid doing poorly in this class.   | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 8. It is important for me to understand the content of this course as thoroughly as possible            | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 9. I am often concerned that I may not learn all that there is to learn in this class.                  | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 10. I desire to completely master the material presented in this class                                  | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 11. Sometimes I'm afraid that I may not understand the content of this class as thoroughly as I'd like. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 12. My goal in this class is to get a better grade than most of the other students.                     | 1 | 2 | 3 | 4 | 5 | 6 | 7 |



**Question 5 – How I feel about life**

| In the following questions, tell us (by circling) how much each statement is true for you: | Strongly disagree | Disagree | Slightly Disagree | Neither agree nor disagree | Slightly Agree | Agree | Strongly agree |
|--|-------------------|----------|-------------------|----------------------------|----------------|-------|----------------|
| 1. In most ways my life is close to ideal.   | 1                 | 2        | 3                 | 4                          | 5              | 6     | 7              |
| 2. The conditions of my life are excellent.  | 1                 | 2        | 3                 | 4                          | 5              | 6     | 7              |
| 3. I am satisfied with my life.  | 1                 | 2        | 3                 | 4                          | 5              | 6     | 7              |
| 4. So far I have gotten the important things I want in life.                               | 1                 | 2        | 3                 | 4                          | 5              | 6     | 7              |
| 5. If I could live my life over, I would change almost nothing.                            | 1                 | 2        | 3                 | 4                          | 5              | 6     | 7              |

**Question 6:** Please check the box under the option that is best for you, even if it is hard to make up your mind. There are no right or wrong answers.

| Indicate whether the following statements are True or False: | True                     | False                    |
|--|--------------------------|--------------------------|
| a. Nothing goes my way.                                      | <input type="checkbox"/> | <input type="checkbox"/> |
| b. I used to be happier.                                     | <input type="checkbox"/> | <input type="checkbox"/> |
| c. I can never seem to relax.                                | <input type="checkbox"/> | <input type="checkbox"/> |
| d. I worry about little things.                              | <input type="checkbox"/> | <input type="checkbox"/> |
| e. Nothing is fun anymore.                                   | <input type="checkbox"/> | <input type="checkbox"/> |
| f. Nobody ever listens to me.                                | <input type="checkbox"/> | <input type="checkbox"/> |
| g. I just don't care anymore.                                | <input type="checkbox"/> | <input type="checkbox"/> |
| h. I worry a lot of the time.                                | <input type="checkbox"/> | <input type="checkbox"/> |
| i. I often worry about something bad happening to me.        | <input type="checkbox"/> | <input type="checkbox"/> |
| j. I don't seem to do anything right.                        | <input type="checkbox"/> | <input type="checkbox"/> |
| k. Nothing ever goes right for me.                           | <input type="checkbox"/> | <input type="checkbox"/> |
| l. Nothing about me is right.                                | <input type="checkbox"/> | <input type="checkbox"/> |

**Question 7:** Please check the box under the option that is best for you, even if it is hard to make up your mind.  
There are no right or wrong answers.

| Indicate how often:                                | Never                    | Sometimes                | Often                    | Almost Always            |
|--|--------------------------|--------------------------|--------------------------|--------------------------|
| m. I get so nervous I can't breathe.               | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| n. I worry when I go to bed at night.              | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| o. I feel like my life is getting worse and worse. | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| p. I feel depressed.                               | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| q. No one understands me.                          | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| r. I feel guilty about things.                     | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| s. I get nervous.                                  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

| Indicate how often:                                  | Never                    | Sometimes                | Often                    | Almost Always            |
|--|--------------------------|--------------------------|--------------------------|--------------------------|
| t. I worry but I don't know why.                     | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| u. I feel sad.                                       | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| v. I get nervous when things do not go right for me. | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| w. Little things bother me.                          | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| x. I worry about what is going to happen.            | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| y. I am afraid of a lot of things.                   | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

**Question 8:** After each statement, tell us how often you have experienced each of the following types of discrimination because of your race or ethnicity or culture.

| Have you experienced this?   |                               | If you had this experience, did it upset you? |          |            |              |           |
|--|-------------------------------|---|----------|------------|--------------|-----------|
|  | Yes or No?<br>(Please Circle) | Not at all                                    | slightly | moderately | considerably | extremely |
| 1. You were discouraged from joining an advanced level class         | Yes/No                        | 1   | 2        | 3          | 4            | 5         |
| 2. You were wrongly disciplined or given after-school detention      | Yes/No                        | 1   | 2        | 3          | 4            | 5         |
| 3. You were given a lower grade than you deserved                    | Yes/No                        | 1   | 2        | 3          | 4            | 5         |
| 4. You were discouraged from joining a club                          | Yes/No                        | 1   | 2        | 3          | 4            | 5         |
| 5. Others your age did not include you in their activities           | Yes/No                        | 1   | 2        | 3          | 4            | 5         |
| 6. People expected more of you than they expected of others your age | Yes/No                        | 1   | 2        | 3          | 4            | 5         |
| 7. People expected less of you than they expected of others your age | Yes/No                        | 1   | 2        | 3          | 4            | 5         |
| 8. People assumed your English was poor                              | Yes/No                        | 1   | 2        | 3          | 4            | 5         |
| 9. You were hassled by police  | Yes/No                        | 1   | 2        | 3          | 4            | 5         |
| 10. You were hassled by a store clerk or store guard                 | Yes/No                        | 1   | 2        | 3          | 4            | 5         |
| 11. You were called racially insulting names                         | Yes/No                        | 1   | 2        | 3          | 4            | 5         |
| 12. You received poor service at a restaurant or store               | Yes/No                        | 1   | 2        | 3          | 4            | 5         |

|  |        |   |   |   |   |   |
|--|--------|---|---|---|---|---|
| 13. People acted as if they thought you were not smart | Yes/No | 1 | 2 | 3 | 4 | 5 |
| 14. People acted as if they were afraid of you         | Yes/No | 1 | 2 | 3 | 4 | 5 |
| 15. You were threatened                                | Yes/No | 1 | 2 | 3 | 4 | 5 |

**Question 9: My culture(s)**

Many of these questions will refer to your heritage culture, meaning the original culture of your family (other than Canadian). It may be the culture of your birth, the culture in which you have been raised, or any culture in your family background. If there are several, pick the one that has influenced you most (e.g. Irish, Chinese, Mexican, African). If you do not feel that you have been influenced by any other culture, please name a culture that influenced previous generations of your family. Your heritage culture (other than Canadian) is: \_\_\_\_\_

Please circle one of the numbers to the right of each question to indicate your degree of agreement or disagreement:

**1=Strongly Disagree to 9=Strongly Agree**

|   |   |   |   |   |   |   |   |   |   |
|---|---|---|---|---|---|---|---|---|---|
| 1. I often participate in my heritage cultural traditions.                              | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
| 2. I often participate in mainstream Canadian cultural traditions.                      | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
| 3. I would be willing to marry a person from my heritage culture.                       | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
| 4. I would be willing to marry a white Canadian person.                                 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
| 5. I enjoy social activities with people from the same heritage culture as myself.      | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
| 6. I enjoy social activities with typical Canadian people.                              | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
| 7. I am comfortable interacting with people of the same heritage culture as myself.     | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
| 8. I am comfortable interacting with typical Canadian people.                           | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
| 9. I enjoy entertainment (e.g. movies, music) from my heritage culture.                 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
| 10. I enjoy Canadian entertainment (e.g. movies, music).                                | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
| 11. I often behave in ways that are typical of my heritage culture.                     | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
| 12. I often behave in ways that are typically Canadian.                                 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
| 13. It is important for me to maintain or develop the practices of my heritage culture. | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
| 14. It is important for me to maintain or develop Canadian cultural practices.          | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
| 15. I believe in the values of my heritage culture.                                     | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
| 16. I believe in mainstream Canadian values.  | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
| 17. I enjoy the jokes and humor of my heritage culture.                                 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
| 18. I enjoy white Canadian jokes and humor.   | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
| 19. I am interested in having friends from my heritage culture.                         | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
| 20. I am interested in having white Canadian friends.                                   | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |

### Question 10 – My culture

In this country, people come from many different countries and cultures, and there are many different words to describe the different backgrounds or cultures that people come from. Some people might say their culture is Canadian, Chinese, Italian or Aboriginal. Just choose the culture that best describes you. **It does not matter what it is.**

These questions ask about your culture and how you feel about it or react to it.

Please fill in: I consider my culture to be \_\_\_\_\_

Use the numbers below to indicate how much you agree or disagree with each statement.

| Use the numbers below to indicate how much you agree or disagree with each statement. |  |   |   |   |   |
|---|--|---|---|---|---|
| 1 = Strongly Disagree, 2 = Disagree, 3 = Agree, 4 = Strongly Agree                    |  |   |   |   |   |
| 1.  | I have spent time trying to find out more about my culture, such as it's history, traditions, and customs. | 1 | 2 | 3 | 4 |
| 2.  | I am active in organizations or social groups that include mostly members of my own culture.               | 1 | 2 | 3 | 4 |
| 3.  | I have a clear sense of my culture and what it means for me.   | 1 | 2 | 3 | 4 |
| 4.  | I think a lot about how my life will be affected by my cultural group membership.                          | 1 | 2 | 3 | 4 |
| 5.  | I am happy that I am a member of the group I belong to.  | 1 | 2 | 3 | 4 |
| 6.  | I have a strong sense of belonging to my own cultural group.   | 1 | 2 | 3 | 4 |
| 7.  | I understand pretty well what my cultural group membership means to me.                                    | 1 | 2 | 3 | 4 |
| 8.  | To learn more about my culture, I have often talked to other people about my cultural group.               | 1 | 2 | 3 | 4 |
| 9.  | I have a lot of pride in my cultural group and its accomplishments.  | 1 | 2 | 3 | 4 |
| 10.   | I participate in cultural practices of my own group, such as special food, music, or customs.              | 1 | 2 | 3 | 4 |
| 11.   | I feel a strong attachment towards my own culture.   | 1 | 2 | 3 | 4 |
| 12.   | I feel good about my cultural background.  | 1 | 2 | 3 | 4 |

THANK YOU VERY MUCH FOR PARTICIPATING IN THIS STUDY!



## Mini Dictionary!

### Page 4

**Disappointed:** not happy

**Pleased:** happy

**Leading:** Living

**figure out:** Find

### Page 5

**point of view:** opinion or personal thoughts

**disagreement:** when people do NOT agree; argument; fight

**perspective:** what another person sees or thinks

**arguments:** disagreements; fights

**upset:** a little angry or mad

**criticizing someone:** saying someone is bad

### Page 6

**figure out:** find the answer; understand

**I blame myself:** I think it is my fault

**I cannot live up to my parents' expectations of me:** I do not do as good as my parents want

**Disappointed:**

**Lousy:** bad

**Stressed:**

**I do not live up to my own standards:** I do not do as good as I want to do

**I fail to live up to my own expectations:** I do not do as good as I want to do

**When I cannot meet the goals I set for myself:** When I can't do the good things I want to do.

### Page 7

**Motivates:** Makes me try

**Avoid doing poorly:** not do bad

**Content:** lessons

**Thoroughly:** much

**Concerned:** worried; stressed; nervous

**Desire:** want

**Master:** understand perfectly; understand well

**Material:** lessons

### Page 8

**Ideal:** perfect; the best  
**Conditions:** situations  
**Satisfied:** happy  
**Goes my way:** happens the way I want  
**Used to be:** was; in the past

## Page 9

**Discouraged:** people said it is a bad idea  
**disciplined or given after-school detention:** punished  
**joining a club:** being part of a group (sports team, music group....)  
**expected more of you:** think that you will be better  
**expected less of you:** think that you will be worse  
**assume:** think without knowing you  
**you were hassled by:** someone caused problems or trouble for you; was angry with you  
**racially insulting names:** names that are not kind about your culture or skin colour  
**threatened:** say or do things to scare you

## Page 10

**Mainstream:** popular; common  
**Willing:** ok; comfortable  
**Interacting:** talking with  
**maintain or develop the practices of:** keep or learn the traditions of  
**values:** what people think is important (to be honest; to be kind...)

## Page 11

**have a clear sense of:** understand  
**be affected by my cultural group membership.:** will change because of my culture  
**pride:** I feel good about  
**accomplishments:** success; the good things it has done  
**practices:** traditions