The "what" and "how" questions of the healthy immigrant effect: Psychosocial resources and demands as pathways to mental health risks

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ABSTRACT

Current research identifies gender, age, and ethnic patterns for the healthy immigrant effect related to mental health, but little research explores what determines immigrants' mental health and how mental health deterioration occurs. This dissertation investigates the 'what' and the 'how' questions by applying the Social Determinants of Health (SDOH) Perspective and the Stress Process Model. To answer the 'what' question, this dissertation draws on the SDOH framework to examine potential social determinants—in the form of structural conditions, behavioral risks and psychosocial demands—affecting long-term immigrants' lower mental health status. To approach the 'how' question, it employs the Stress Process Model to investigate the differential exposure to behavioral risks and psychosocial demands between recent and long-term immigrants. The analysis of the data from the Canadian Community Health Survey-Mental Health 2012 and the General Social Survey-Social Identity 2013 indicates that structural conditions, behavioral risks, and psychosocial demands co-influence immigrants' mental health to some extent. Behavioral risks have independent contributions to mental health, but the contributions are small. Psychosocial resources and demands, however, have the greatest impact on mental health. An examination of the relationships between length of migration and psychosocial resources indicates that, compared to recent immigrants, long-term immigrants are in the state of 'high support and high strain,' and the differences in these psychosocial resources and demands translate into mental health differences (the so-called healthy immigrant effect) between long-term and recent immigrants.

Key words: immigrants, mental health, social support, interpersonal stress, health behavior

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Most Ph.D. students would agree that writing a dissertation is an isolating experience, but surprisingly I have found it soothing and therapeutic. Being a recent immigrant to Canada, who struggles with re-building supportive networks after migration, reading other immigrants' narratives reminds me that my experience is real and valid.

Graduating from Brandeis University with a background in qualitative sociology, I used to think that I would be a sociologist like Arlie Hochschild, whose work introduced me to the research of emotions. For some reasons, my dissertation turned out to be quantitative and macro-level. I was, surprisingly, quite fascinated by the world of social statistics.

As a sociologist, I was often asked to stress the significance of my work by connecting it to a broader social context. It's no news that immigrants have problems integrating into mainstream society, so it wasn't difficult for me to come up with legitimate reasons to study immigrants. But deep down I knew this dissertation was for me to find some reasons to explain my own (and other international students') experience in Canada—why did I feel worse a few years after migration and why did these negative feelings not occur earlier? It turned out that most immigrants felt just fine in the beginning but slowly their dissatisfaction with life grew.

Many immigrants I encountered were frustrated with the process of 'learning in reverse'—a gradual mental phase of un-learning who they were or what they achieved in their home countries. In some ways, like others, I also experienced some phases of learning in reverse. I was never a racial minority in my own country, but in Canada I learned that I might have to do more and still achieve less. For me, this realization was distressing.

Throughout the course of my Ph.D., I experienced some low points in my life and had to take a brief leave of absence. During those moments, my supervisor—Margaret Denton—never gave up on me. With her support, I was able to complete my dissertation (despite being terribly behind the coursework at some point in my Ph.D. studies). I was a difficult student to supervise and Margaret never lost her patience. She never imposed her ideas on me, even though she knew I often wasted time on pursuing dead-end questions. As a mentor, she always reminded me the purpose of my research and prevented me from over-researching minor findings. In total, she read more than 700 pages of my writing, some of which were littered with errors and unarticulated thoughts. I was never once felt judged or criticized by her. I always found her suggestions friendly and soothing.

I also would like to thank Paul Glavin and Vic Satzewich for their valuable comments on my dissertation. I have known Vic since the first year of my Ph.D. He is a very laid-back and down-to-earth person, who always makes me feel comfortable to share my (unformulated) ideas with him. Paul is a very sharp researcher, and I believe that his suggestions ultimately made my dissertation shifted toward a more solid direction. I could always feel that he not only cares about the content of my dissertation but also the publishability of my work.

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1.1 Background

In Canada, immigration has been part of the solution to meet long-term economic growth and short-term labor shortage (Green & Green, 1998). Starting in 1996, increase in migration has become the major contributor to Canada's population growth (Bohnert, Chagnon, & Dion, 2015). In 2011, immigrants represented 20.6% of the total Canadian population (Statistics Canada, 2011). Not only is Canada's immigrant population growing, there has also been a major shift in its racial and ethnic composition following the introduction of the "point system" in 1967. Prior to 1970s, European countries such as United Kingdom, Germany, Italy, and the Netherlands were the major sources of Canada's immigrants. After the 1970s, Asian countries including China, Philippines, and India became the primary immigrant-sending countries (Statistics Canada, 2011).

Canada's immigrant categories primarily consist of economic class immigrants, family class immigrants, and refugees, with economic class immigrants being the largest group due to Canada's strong emphasis on human capital and transferable skills (Antecol, Cobb-Clark, & Trejo, 2003). This migration pattern is in sharp contrast with the United States, in that only 15% of the immigrants accepted by our southern neighbor each year are of the economic class. In 2014, 63.4% of the incoming immigrant populations to Canada were economic immigrants, 25.6% were family class immigrants, and 8.9% were refugees (Martel & D'Aoust, 2016). From 2004 to 2014, the percentage of economic immigrants among all incoming immigrants was between 55% and 65%, while the percentage of family class immigrants and refugees were between 20% and 30%, and 8% and 14%, respectively. Recent immigrants in Canada are relatively young. In this decade, childhood and teenage immigrants typically constitute 20% of

all incoming immigrants to Canada, while elderly immigrants make up less than 5% (Martel & D'Aoust, 2016[1]). In 2011, 50.8% of Canadian recent immigrants fell in the age range between 25 and 54, with a median age of 31.7 (Statistics Canada, 2011).

Compared to family class immigrants and refugees (whose skills and health status are less scrutinized during the migration process), economic immigrants comprise a highly self-selective group with superior health status relative the two aforementioned immigrant classes (Zhao, Xue, & Gilkinson, 2010) as well as native-born Canadians (Antecol & Bedard, 2006; De Maio & Kemp, 2010; Setia, Quesnel-Vallee, Abrahamowicz, Tousignant, & Lynch, 2009). Historically, immigrant-receiving countries such as Canada have been aware of the health costs associated with immigrants who are chronically ill, and have formulated a screening process to detect health-related inadmissibility that includes risks to public health, public safety, and excessive health care demands (Mawani, 2007; Weibe, 2009). As a result, an extant body of research in North America has found empirical support for the 'healthy immigrant effect': a transient phenomenon where recent immigrants have better but short-lived physical and mental health than their long-term immigrant and native-born counterparts (Antecol & Bedard, 2006; De Maio & Kemp, 2010; Hao & Kim, 2009; Kaestner, Pearson, Keene, & Geronimus, 2009; Setia et al., 2009).

In the case of Canada, given that over 50% of all incoming immigrants each year are economic immigrants, it is possible that the healthy immigrant effect found in Canadian immigrants mainly reflects the initial health advantages of economic immigrants (cf. Newbold,

[1] In 2005, immigrants under 15 constitutes 20.6% of all incoming immigrants (57,590/262,242=0.206). In 2014, immigrants under 15 constitutes 18.6% of all incoming immigrants (48,521/260,404=0.186). In 2014, only 4,935 elderly immigrants were accepted (4,935/260,404=0.0195). In 2013, 9197 elderly immigrants were accepted (9197/259,023=0.0355).

2006). In short, compositionally, economic immigrants' strength in numbers might overshadow the health profiles of family class immigrants and refugees. In this vein, it is possible that the empirical findings of Canadian immigrants' health deterioration patterns are also more reflective of economic immigrants, since previous Canadian migrant health literature suggests that refugees' health outcomes improve over time (Beiser & Hou, 2001).

A review of the literature on immigrant health suggests that the healthy immigrant effect exists for physical health (Antecol & Bedard, 2006; Finch, Do, Frank, & Seeman, 2009; McDonald & Kennedy, 2004; Newbold, 2006), and—to some extent for—mental health (Ali, 2002; Hill, Angel, Balistreri, & Herrera, 2012; Takeuchi et al., 2007). Beginning in 1990, the healthy immigrant effect became a popular topic in public health and psychiatry. Public health researchers have made tremendous contributions to migrant health research; however, their research interests focus on physical health, such as weight gain (Antecol & Bedard, 2006; Bergeron, Auger, & Hamel, 2009; Guendelman, Ritterman-Weintraub, Fernald, & Kaufer-Horwiz, 2013; Ro & Bostean, 2015; Setia et al., 2009; Van Hook & Baker, 2010; Van Hook & Balistreri, 2007), reproductive health (Janevic, Savitz, & Janevic, 2011; Ramraj, Pulvar, & Siddiqi, 2015; Urquia, O'Campo, & Heaman, 2012), chronic conditions (Barcellos, Goldman, & Smith, 2012; Gee, Spence, Chen, & Takeuchi, 2007; Huh, Prause, & Dooley, 2008), and self-rated health (Huh et al., 2008; Ro, Fleischer, & Blebu, 2016; Setia et al., 2009).

When it comes to the mental health of immigrants, both public health researchers and psychiatrists have offered prolific research insights, but the focus has been exclusively on mental disorders such as anxiety and mood disorders (Alegria et al., 2007; Aglipay, Colman, & Chen, 2013; Breslau & Chang, 2006; Gee, Spencer, Chen, Yip, & Takeuchi, 2007; Leu et al., 2008; Puyat, 2013; Takeuchi et al., 2007; Williams et al., 2007), substance use disorders (Alegria,

Sribney, Woo, Torres, & Guarnaccia, 2007; Takeuchi et al., 2007), psychosis (Berg et al., 2014; Morgan, Mallett, Hutchinson, & Leff, 2004), suicidal ideation and suicide (Borges et al., 2009; Cheng et al., 2010; Di Thiene, Alexanderson, Thinghog, Torre, & Mittendorfer-Rutz, 2015; Ungemack & Guarnaccia, 1998), depression (Alegria et al., 2007; Gee et al., 2007; Takeuchi et al., 2007), and schizophrenia (Selten & Hoek, 2008; Smith et al., 2006).

Relative to public health researchers and psychiatrists, sociologists have not made comparable contributions to the area of migrant health research. In the sociology of migration, economic integration, education, and social ties (immigrants' relationships with ethnic and non-ethnic groups)—what I call the *trinity of assimilation*—are the standard measurements to evaluate immigrants' social integration (Alba & Nee, 1997; Aparicio, 2007; Boyd, 2002; Chiswick et al., 2005; Feliciano & Rumbaut, 2005; Hagan, 1998; Lindstrom & Massey, 1994; Levels, Dronkers, & Kraaykamp, 2008; Li, 2008; Menijivar, 2000, 2008; Portes & Zhou, 1993; Reitz, 2007; Sanders, Nee, & Scott, 2002; Zeng & Xie, 2004). In his article "Assimilation and its Discontents," Rumbaut (1997) argues that health is one area through which immigrants' assimilation contradicts the linear adaptation process, for second generation immigrants' health turns for the worse compared to their parents' generation. Other studies suggest that the offspring of Asian immigrants largely conform to the image of 'model minority' by showing intergenerational economic mobility, but also suffer from disproportionately high rates of suicidal ideation[2] and low self-esteem (Cheng et al., 2010; Wolf, 1997). Despite these apparently contradictory assimilation patterns, health as an essential component to social integration has received far less attention in migration health research in comparison to socio-economic outcomes.

[2] The rate for suicidal ideation among Asian American population is 8.8%.

The need for sociologists to study immigrants' health is pressing, as various researchers have argued that mental health is integral to educational attainment (Kessler, Foster, & Sanders, 1995; McLeod & Fettes, 2007; Miech, Moffitt, Wright, & Silva, 1999; Needham, Crosnoe, & Muller, 2004), productivity at work (Keyes, 2002; Shamian, O'Brien, Thomson, Alksnis, & Kerr, 2003), and supportive social relationships (Booth & Johnson, 1994; Monden, 2007; Yorgason, Booth, & Johnson, 2008). Though sociologists of migration have not been attentive to immigrants' health as a process or outcome of social integration, the sociological approaches to studying health set them apart from those of public health and psychiatry. As previously mentioned, the disciplines of public health and psychiatry emphasize mental disorders, whereas sociologists focus on everyday emotions and feelings, such as guilt, shame, anger, ambivalence, or distress, as normal responses to common stressors (Anderson, 2016; Baldassar, 2015; Glavin, Schieman, & Reid, 2011; Mabry & Kiecolt, 2005; Mirowsky & Ross, 2003; Reay, 2005; Ross & Van Willigen, 1996; Scheff, 2000; Schieman, 1999; Wilson, Shuey, & Elder, 2003).

In the sociology of migration, there are two major approaches guiding health-related research: the social regulation of emotions, and the social distribution of emotions. The former approach is influenced by Hochschild's (1983) seminal work *The Managed Heart*. The social regulation of emotions approach, a process-oriented approach, has inspired sociologists to study the emotional experiences of transnational families (Mehrotra & Calasanti, 2010; Parrenas, 2005; Shih & Pyke, 2010; Ryan, 2008) and the emotion management strategies of immigrant workers in service-oriented jobs (Aranda, 2003; Ibarra, 2002; Kang, 2003; Nath, 2011; Solari, 2006). In comparison, the social distribution of emotions approach is outcome-based and relatively less developed in the sociology of migration. Only a handful of studies investigate the effect of exposure to health risks and their emotional effects, particularly distress, among immigrant

populations (Abdulrahim, James, Yamout, & Baker, 2012; Gong, Xu, & Takeuchi, 2011; Mirowsky & Ross, 1980; Montazer & Wheaton, 2011; Montazer, Wheaton, & Noh, 2016; Noh & Avison, 1996; Zhang, Hong, Takeuchi, & Mossakowski, 2012).

To set my dissertation apart from the research focus of public health and psychiatry, I chose several mental health measures, including psychological distress, positive mental health, self-rated mental health, and subjective well-being (life satisfaction), which are not pathological in nature and require no health professionals to offer diagnosis. This choice reflects the sociological traditions to understand everyday emotions under common stressors, such as interpersonal conflicts and socio-economic disadvantage. Additionally, because previous research argues that immigrant populations do not show consistent patterns across psychological outcomes (Harker, 2001), I chose to include several mental health measures. One particular limitation of concentrating on a specific psychological outcome is that not all migration-related mental health manifests in the form of depression. Given that not all determinants of good and poor health are necessarily the same, it is important to investigate a group of psychological outcomes (Segall & Chappell, 2000). Furthermore, absence of mental illness should not be equated with good mental health (Harker, 2001; Keyes, 2002). Though various aforementioned studies have shown that immigrants are relatively free of depression and depressive symptoms, it would be erroneous to assume that immigrants' mental health good overall, especially when immigrants have poor social determinants of health, such as lower social support and impaired socioeconomic status.

I avoid studying mental disorders for two major reasons: (1) Previous studies have consistently found that immigrants are less likely than non-immigrants to consult mental health specialists (Abe-Kim et al., 2007; Chen & Kazanjian, 2005; Morgan et al., 2004). Within immigrant populations, long-term immigrants are more likely than their recent counterparts to

visit health professionals (Leclere, Jensen, & Biddlecom, 1994; Wu, Penning, & Schimmele, 2005). Additionally, pathways to psychiatric care vary by group, and as a result some ethnic groups are overrepresented in certain mental disorders (Morgan et al., 2004). Since diagnoses are required for identifying mental disorders, differences in recent and long-term immigrants' health-seeking patterns might potentially bias our understanding of the mental health inequalities between the two groups. (2) Mental disorders are based on categorical assessment. However, categorical assessments can be arbitrary in nature and are subjected to historical understandings of mental health and illness (Kessler, 2002). As a result, I chose dimensional assessments (continuous score) such as psychological distress and positive mental health as the major mental health measures for my dissertation.

Self-rated mental health was chosen as a dependent variable because there were surprisingly few studies investigating how immigrants perceive their mental health status, and most of them are based on American samples (Bergeron et al., 2009; Chadwick & Collins, 2015; Dolly et al., 2012; De Castro, Rue, & Takeuchi, 2010; Gelatt, 2013; John, De Castro, Martin, Duran, & Takeuchi, 2012; Kwak, 2016; Maximova & Krahn, 2010; Mulvaney-Day, Alegria, & Sribney, 2007; Schachter, Kimbro, & Gorman, 2012; Zhang & Ta, 2009). Subjective well-being was included as a dependent variable because migrant health literature published in the past decade predominantly reflected the emotional experience of European immigrants (Baltatescu, 2007; Beier & Kroneberg, 2009; Gokdemir & Dumludag, 2012; Hadjar & Backes, 2013; Klein, 2013; Melzer, 2011; Safi, 2010). Very few Canadian studies published in the past ten years were concerned with immigrants' subjective well-being (excepting Berry & Hou, 2016; Hou, 2009).

My dissertation involves studying patterns of healthy immigrant effect for various psychological outcomes, but my major goal is to examine potential social determinants—in the

form of behavioral risks and psychosocial resources—affecting long-term immigrants' lower mental health status, and to investigate whether there is differential exposure to or accumulation of behavioral risks and psychosocial resources between recent and long-term immigrants.

In sum, the first goal of this dissertation is to examine the extent to which the healthy immigrant effect applies to various positive and negative psychological outcomes of Canadian immigrants. The second goal is to investigate the major sociological factors shaping Canadian immigrants' mental health. To answer this question, the social determinants of health framework is useful in that it highlights the major behavioral and structural determinants stratifying mental health statuses. The social determinants of health framework is a theoretical concept that aids researchers to answer the 'what' question. For example, this dissertation asks, 'what are the major behavioral or structural health risks immigrants face in Canada?' The social determinants of health framework helps pinpoint the major health risks—be it exposure to socio-economic disparity, sedentary lifestyles or interpersonal conflicts—contributing to immigrants' mental health risks.

However, the 'what' question only allows us to explore part of the story. It may point to the leading causes of mental health deterioration for Canadian immigrants, but we are still puzzled as to how recent immigrants' mental health outcomes end up being indistinguishable from the native-born. This 'how' question requires applying the Stress Process Model to explain how long-term immigrants lose mental health advantages as they become incorporated into the vertical mosaic of Canadian society. For example, if exposure to interpersonal conflicts is identified as a leading cause of mental health deterioration according to the social determinants of health framework, the Stress Process Model can be used to explain how the stress of migration is channeled through a significant increase in interpersonal conflicts, to a point where immigrants'

mental health is jeopardized. In short, the social determinants of health framework can inform us of the major health risks recent and long-term immigrants both face, while the Stress Process Model shows us which health risks are more prevalent among long-term immigrants who experience mental health deterioration as a result.

1.2 Health deterioration among immigrants and three possible explanations

In migrant health research, various studies have utilized the social determinants of health framework to identify the direct effects of structural and behavioral determinants on immigrants' health declines (Landale, Oropesa, Llanes, & Gorman, 1999; McDonald & Kennedy, 2005; Newbold & Danforth, 2003; Subedi & Rosenberg, 2014; Zsembik & Fennell, 2005). Social determinants of health approaches are deeply concerned with the social stratifying effects of social forces on health, which begin with the premise that health outcomes are not randomly distributed but embedded in social structural ladders (Williams, 2002).

Social determinants of health approaches distinguish structure from agency. Structural determinants derived from underlying social structures refer to upstream, less modifiable factors including gender, race, age, and socioeconomic status (SES), while behavioral determinants refer to downstream, lifestyle or personal choices, such as smoking, drinking, dietary practices, and exercise levels (Braveman, Egerter, & William, 2011; Denton, Prus, & Walters, 2004; Denton & Walters, 1999; Prus, 2011; Schnittker & McLeod, 2005). It is consistently found that immigrants' health behaviors become worse over time, including increased drinking, smoking, and less exercise and vegetable consumption (Lopez-Gonzalez, Aravena, & Hummer, 2005; Subedi & Rosenberg, 2014), yet interpretations of such a behavioral changes vary.

A number of researchers argue that immigrants' behavioral assimilation stems from the loss of culture buffering that promotes healthy lifestyles (Landrine & Klonoff, 2004; Taylor &

Sarathchan, 2016). This line of interpretation assumes that the Western lifestyle is unhealthy. However, based on an investigation of multiple behavioral outcomes, Abraido-Lanza et al. (2005) argue that behavioral assimilation does not uniformly change toward the unhealthy ones. For example, immigrants do drink and smoke more after migration, but they also exercise more.

In articulation of the harmful aspects of western lifestyles, Mirowsky and Ross (2015) argue that, 'the default American lifestyle'—or the postmodern lifestyle in general—has fostered health risks due to an over-reliance on pre-processed food and mechanical energy. It takes social resources to actively resist sinking into unhealthy lifestyles (Mirowsky & Ross, 2015; Van Hook, Quiros, Frisco, & Fikru, 2016), which immigrants are often deprived of. As a result, Van Hook et al. (2016) adopt a strong emphasis on social disparities in life chances to argue that immigrants are aware of the health risks associated with Western lifestyles, but their reduced life chances make it harder for them to maintain health-promoting behaviors. For example, some studies argue that having weak ethnic ties is a structural determinant of health, as immigrants would be less motivated to keep up with health routines (McDonald & Kennedy, 2005).

Another explanatory framework—the Stress Process Model—argues that, though the social determinants of health approaches capture status variations in health outcomes, they do not capture status variations in stressors (Kosteniuk & Dickinson, 2003). For example, although social determinants of health approaches describe health inequalities between recent and long-term immigrants, it does not capture the differential exposure to stressors such as interpersonal conflicts derived from variations in migration duration. Kosteniuk and Dickinson (2003) argue that social determinants of health approaches ignore the mediating role of status-induced stressors. They further argue that social determinants of health approaches do not make distinctions between primary and secondary social determinants (Kosteniuk & Dickinson, 2003).

According to these authors, social support should be treated as a secondary social determinant, given that it is derived from individuals' social locations—gender, race, age, and SES—that are the primary and fundamental structural determinants.

One major advantage of the Stress Process Model over the behavioral assimilation or social disparity approach is that it conceptualizes social determinants in two layers: upstream structural determinants and downstream pathways (Aneshensel, 2009; Kosteniuk & Dickinson, 2003). It maps out how upstream structural determinants of health—race, ethnicity, gender, SES, and age—channel into health disparities via various downstream pathways, such as social support, self-esteem, and mastery. This model is highly intervention-oriented, as it aims at improving malleable social resources, rather than at immutable or durable social characteristics (Aneshensel, 2009). In the stress process framework, the effects of structural or behavioral determinants on health outcomes can be enhanced or reduced through social resources (mediation). This framework also considers the possibility that, under the same level of risk exposure, health outcomes are conditional on the degree of an individual's social resources (moderation).

1.3 Applying the Stress Process Model in the context of migration

Though the Stress Process Model has become a useful paradigm for explaining health disparities (Turner, Lloyd, & Taylor, 2006; Wheaton, 2010), very few migrant health studies explicitly utilize it to research mental health disparities between recent and long-term immigrants, with a few exceptional studies that examine depression patterns among immigrants (Mossakowski, 2003; Noh & Avison, 1996; Noh, Beiser, Kaspar, & Hou, 1999; Noh & Kaspar, 2003; Noh, Kaspar, & Wickrama, 2007). Research that examines the direct associations between length of migration (or nativity status) and health outcomes are still the majority. Additionally,

social support is often considered as a separate factor independent of, and having no interactional effects with, length of migration or nativity status (Ornelas & Perreira, 2011; Vega, Kolody, & Valle, 1987).

A review of existing literature suggests that the role of social support in mediating or moderating the effects of migration on health is underexplored. There is consensus that strong social ties, derived from dense and wider social networks, are associated with good health (Pan & Carpiano, 2013). However, not all aspects of immigrants' social relationships promote good health. In contrast to the empirical findings that immigrants' family-oriented cultural values help them maintain or enlarge their social ties (Almeida et al., 2009; Bulanda & Brown, 2007), it has also been found that immigrants' networks are not only smaller and more homogenous, but also reap fewer economic pay-offs than the networks of native-born Canadians (Kazemipur, 2006). Furthermore, social resources are not equally shared among network members. Female or marginalized members are less likely to benefit from their networks (Cranford, 2005; Hagan, 1998; Ryan, Sales, Tilki, & Siara, 2008). Participating in ethnic social networks can also deter future incorporation into non-ethnic communities (Fong & Ooka, 2002).

1.4 Stress process and the timing of migration

Finally, structural determinants of mental health are not invariant across age. Prior studies have found that migration at middle-age is associated with better health outcomes (Hill et al., 2012). Hence, some researchers argue for the inclusion of developmental contexts in migrant health studies (Beck, Corak, & Tiena, 2012; Gubernskaya et al., 2013; Gubernskaya, 2014; Leu et al., 2008). Using life course perspectives, migrant health studies have identified migration at childhood or old age as particularly stressful for immigrants, given that children and elderly persons have less agency than young or middle-aged adults in making the decision to migrate

(Gong et al., 2011). Depending on age at migration, immigrants' health outcomes are strongly shaped by their interactions with social institutions at particular life stages (Coll & Magnuson, 2005). It is found that although childhood and teenage immigrants are able to establish native-born networks and reach economic integration, they face unique developmental challenges such as integrating dual ethnic identities and reconciling intergenerational conflicts, both of which translate into mental health risks (Leu et al., 2008; Suarez-Orozco, 2005). Older immigrants also have particular challenges, as their life chances are highly linked to their adult children, and they face great uncertainty in terms of access to healthcare and limited opportunities for social integration (Gubernskaya, 2014). All of these migration-related circumstances can contribute to interpersonal strain and mental health risks.

1.5 Objectives of dissertation

In sum, while the migration health literature has been useful in identifying the social and behavioral determinants of mental health specific to immigrants, there are some limitations: (1) An exclusive focus on mental disorders rather than emotional resilience, such as positive mental health; (2) Limited literature on immigrants' normal emotional response to stressors, such as psychological distress; (3) Overemphasis on behavioral determinants; (4) Ignoring the effects of age at migration on psychological outcomes; (5) Overlooking the mechanisms or pathways linking social and behavioral determinants to health disparities.

Considering these limitations, this dissertation has a number of objectives: (1) It will investigate whether or not the healthy immigrant effect exists for Canadian immigrants across different psychological outcomes including distress, positive mental health, subjective well-being, and self-rated mental health; (2) It will empirically test the behavioral assimilation (cultural-buffering) hypothesis against the social disparities hypothesis, and determine if

behavioral changes or structural constraints best explain health disparities between recent and long-term immigrants; (3) It will indicate the major downstream pathways responsible for channeling upstream determinants of health into health disparities within various immigrant groups: (4) It will examine the effect of age at migration on psychological distress, as an example to show that early age migration is associated with exposure to psychosocial risks that may impede childhood or teenage immigrants' social integration as they reach adulthood.

To answer these questions, I will use survey data from the Canadian Community Health Survey-Mental Health 2012 (hereafter CCHS-MH) and General Social Survey-Social Identity 2013 (hereafter GSS-SI). CCHS-MH is ideal for a few reasons: It offers a range of broad and narrow psychological outcomes, including self-rated mental health, psychological distress, mood disorder, depression, and positive mental health. Furthermore, the survey also includes measures of interpersonal strain (negative social interaction), health behavior measures, and social support. As such, CCHS-MH is optimal for using social determinants of health approaches and the Stress Process Model to study the mental health of Canadian immigrants.

Nevertheless, CCHS-MH also has some limitations: as a health-exclusive survey, it leans towards measurements of health behavior and healthcare utilization. In addition, CCHS-MH did not collect immigrants' citizenship status and immigrant class categories. As a result, I used GSS-SI to study the effect of immigrant class and citizenship status on immigrants' mental health. The shortcoming of the GSS-SI is that it only has two mental health measures, self-rated mental health and subjective well-being. The self-rated mental health measure in GSS-SI is identical to the one in CCHS-MH. The comparison across surveys helps to determine whether immigrant class or citizenship status matters when it comes to studying immigrants' mental health.

Chapter 2 Literature Review

This chapter begins with a historical review of migrant health studies and major contemporary findings on the healthy immigrant effect. The ensuing section introduces and distinguishes three major theoretical explanations for the loss of the healthy immigrant effect, including the cultural buffering (behavioral assimilation) hypothesis, social disparity perspectives, and the Stress Process Model. For the stress model, possible pathways of health deterioration in current migrant health literature are reviewed. In the last section, the role of age at migration in mental health guided by the Stress Process Model and life course perspectives will be discussed. After each section of the review, a number of research questions and hypotheses will be posed.

2.1. From 'sick immigrant' to 'healthy immigrant': A paradigm shift in the migrant health literature

Canada's current immigrant selection process favours immigrants who are young and in good health (Bisaillon, 2013; Gushulak & Williams, 2004; Islam, 2013). According to the Immigration and Refugee Protection Act (IRPA), medical inadmissibility is defined as health conditions that would place excessive demands on health and social services or pose danger to public health. Situating immigrant health policies in a global context, however, Canada is not the only country heavily selecting healthy immigrants. Other immigrant societies, including the U.S., U.K., and Australia also emphasize health evaluations in the migration process (Lakhani & Timmermans, 2014; MacPherson & Gushulak, 2006; Williams & Holt, 2013). It is worth mentioning that not all countries are in favor of heavy health screening. Israel is one of the countries that welcomes people of Jewish descent living abroad to return to Israel regardless of their health conditions. As a result, Constant, Garcia-Munoz, Neuman, and Neuman (2015) argue

that there is a sick immigrant effect in Israel, where immigrants' health is generally worse than the native populations.

Most of the countries, however, rely on state-selection processes to identify prospective immigrants who are healthy and resourceful. Lakhani and Timmermans (2014) argue that health screening is not only a biological evaluation process but also a stratifying mechanism favoring immigrants who are economically and socially resourceful. The medical evaluation process appears objective, transparent, and inclusive, but it acts as a barrier rather than a bridge for prospective immigrants who have doubts about their admissibility. In cases where further medical examinations are required or legal professionals need to be consulted, those with precarious social standings are most likely to forgo their migration endeavors. It should come as no surprise that immigrants who 'make it' are healthier than their native-born peers in the receiving society (Ali, 2002, Ali, McDermott, & Gravel, 2004) and their counterparts remaining in their home countries (Wu, Chi, Plassman, & Guo, 2010).

Previous research has not reached consensus on the direction between migration and health (Cockrane, 1977; Delaney, Fernihough, & Smith, 2013; Findley, 1988; Ryan, Leavey, Golden, Blizard, & King, 2006). Current migrant studies suggest that individuals who are young, healthy, better educated, and with stronger migration networks are more likely to migrate (Kaestner & Malamud, 2014; McKenzie & Rapoport, 2010). Nonetheless, earlier theories—especially those prior to World War II—have contended just the opposite: unhealthy individuals were more likely to experience geographical relocation. Numerous small-scale clinical studies have indicated that mentally ill persons are more likely to drift to other countries, and thus emerged the social drifting hypothesis (Beiser, 2005; Bhugra & Arya, 2005). These studies suggest that mental health problems were the driving force of migration.

In the early 20th century, the sick immigrant paradigm emerged as a public response to clinical evidence (Beiser, 2005). The assumption that mentally unstable individuals will drift to other cities or countries has been supported to some extent. One clinical study finds that 40% of their patients suffering from severe mental illness had changed their address in the previous two years, suggesting that the mentally ill can be very geographically mobile (Lamont, Ukoumunne, Tyrer, Thornicroft, & Slaughter, 2000). Another study also supports that the mentally ill are more like to move geographically than those without mental health concerns. Reasons for such geographic mobility include searching for more affordable housing or social services, usually in a more economically deprived area (Almog, Curtis, Copeland, & Congdon, 2004), or avoiding the stigma of mental illness in smaller communities (Parr, Philo, & Burns, 2004). Likewise, international migration studies based on clinical evidence or survey data collected between 1970 and 1980 also find that the foreign-born had higher rates of psychiatric institution than the native born (Carpenter & Brockington, 1980; Cockrane & Bal, 1989). For example, immigrants from Ireland, Scotland, and Poland have higher rates of psychiatric institution than the native-born in England and Wales (Cochrane, 1977).

In the late 20th century, the healthy immigrant paradigm emerged as a result of increasing self-selection and state-selection during the migration process. The social construction of immigrants has become more positive—immigrants are no longer perceived as feeble-minded[3] but rather self-selected individuals who are hardy, resilient, and adventurous (Kao & Tsai, 1986;

[3] In 1906, Canadian Immigration Act, Section 26, was expanded to include the following: "No immigrant shall be permitted to land in Canada, who is feebleminded, an idiot, or an epileptic, or who is insane, or has had an attack of insanity within five years; nor shall any immigrant be so landed who is deaf and dumb, or dumb, or blind or infirm, unless he belongs to a family who accompany him or are already in Canada and who give security, satisfactory to the Minister, and in conformity with the regulations in that behalf, if any, for his permanent support if admitted into Canada." (quoted from Hanes, 2009: 99)

Kamya, 1997; Lee, Brown, Mitchell, & Schiraldi, 2008). In recent immigrant health literature informed by community-based study designs, various immigrant characteristics are found to be protective of physical health and mental health, including migratory planning (Chou, 2009; Gong et al., 2011; Leavey, Rozmovits, Ryan, & King, 2007), health-promoting behaviors (Kimbro, 2009; Osypuk, Roux, Hadley, & Kandula, 2009; Finch et al., 2009), robust social networks (Cislo, Spence, & Gayman, 2010; Kao & Tsai, 1986; Vega et al., 1987), and abilities to develop coping strategies (Ek, Koiranen, Raatikka, Jarvelin, & Taanila, 2008; Puyat, 2013).

2.2 The healthy immigrant effect: Complicated phenomenon, nuanced findings

In contrast to the earlier view that immigrants carry germs and diseases to the receiving countries, contemporary migrant health research reveals just the opposite: immigrants' health is superior to that of the native population, and this pattern is especially apparent for visible minority immigrants (Kobayashi & Prus, 2012; Omariba & Ng, 2011). The academic fascination with immigrants' health is unabated; however, the question has evolved from discovering the pathologies of immigrants' bodies and minds to re-discovering the salutary effects of immigrants' 'health-promoting' native cultures.

The healthy immigrant effect refers primarily to recent immigrants being physically or mentally healthier than their long-term immigrant and native-born counterparts, as well as the convergence of health status between the two groups over time (Acevedo-Garcia, Bates, Osypuk, & McArdle, 2010; Ali, 2002; Cho, Frisbie, Hummer, & Rogers, 2004; Hamilton & Hummer, 2011; McDonald & Kennedy, 2004; Subedi & Rosenberg, 2014; Wu & Schimmele, 2005). Studies of the healthy immigrant effect focused on measuring the physical health of immigrants have generated robust empirical support, including chronic conditions (Finch et al., 2009; McDonald & Kennedy, 2004; Newbold, 2006), activity limitations (Antecol & Bedard, 2006),

BMI (Antecol & Bedard, 2006), and obesity (McDonald & Kennedy, 2005). There is also some empirical support for immigrants' lower rates of depression and alcohol dependence, as well as more positive well-being than the native-born population (Ali, 2002; Harker, 2001).

Nevertheless, immigrants' health status advantage is not as robust in the long run, as some longitudinal studies have indicated that immigrants experience health deterioration in perceived general health and mental health (De Maio & Kemp, 2010). Newbold (2009) indicates that health deterioration can happen in two years after arrival. Furthermore, immigrants' overall health deteriorates faster than the native-born population as they age (Dunn & Dyke, 2000; Newbold, 2005a).

Despite various empirical findings confirming the existence of a healthy immigrant effect, some studies have yielded mixed results (Gubernskaya, 2014; Gubernskaya, Bean, & Van Hook, 2013; Kobayashi & Prus, 2012; McDonald & Kennedy, 2004; Montazer & Wheaton, 2011; Newbold, 2006; Newbold & Danforth, 2003; Ro & Bostean, 2015), weak support (Rubalcava, Teruel, Thomas, & Goldman, 2008), or no support (Beiser & Hou, 2001; Cuellar, Bastida, & Braccio, 2004). For instance, using binomial logistic regression analysis Newbold (2005) suggests that immigrants are not more likely than the native-born to rate their health as fair or poor[4]; however, using the survival analysis, the former are at higher odds of transitioning into worse health status. With respect to the positive psychological outcomes of immigrants, there is little indication that immigrants are better off than the native-born. For example, Hendriks (2015) has found that immigrants are rarely happier than their native counterparts, and a 2016 study conducted by Frank and colleagues suggests that levels of life satisfaction are similar among

[4] In another article, Newbold (2006) finds that there's no significant difference of self-rated health between Canadian immigrants and non-immigrants, but there is strong evidence of healthy immigrant effect for chronic conditions.

various groups of immigrants and the native-born. Some groups of immigrants—particularly Chinese, Bangladeshi, and Iranian immigrants—even have lower life satisfaction than Canadians (Frank, Hou, & Schellenberg, 2016). These findings are striking, since Chinese and South Asians experience less depression than other groups of immigrants (Wu, Noh, Kaspar, & Schimmele, 2003).

Currently, there is a constellation of studies aiming to investigate the extent of the healthy immigrant effect across subcategories of immigrants, including older immigrants (Gee, Kobayashi, & Prus, 2004; Gubernskaya, 2014; Gubernskaya et al., 2013; Kobayashi & Prus, 2012), female immigrants (Hill et al., 2012; Hao & Kim, 2009; Kobayashi & Prus, 2012; Read & Reynolds, 2012), refugees (Beiser, 1988; Beiser & Hou, 2001), ethnic minority immigrants (Cho et al., 2004; Cuellar et al., 2004; Finch et al., 2009; Read & Reynolds, 2012; Takeuchi et al., 2007), childhood immigrants (Beiser et al., 2002), second or third-plus generation immigrants (Acevedo-Garcia et al., 2010; Crosnoe, 2006; Harker, 2001; Montazer & Wheaton, 2011), and immigrants in non-traditional immigrant receiving sites (Kiang, Grzuwacz, Marin, Arcury, & Quandt, 2010).

The emphasis on group variance shows that the healthy immigrant effect is not uniform across groups. Its pattern becomes increasingly complex as immigrants are broken down into specific groupings. First, it is found that refugees' mental health improves as the duration of residence increases (Beiser, 1988; Beiser & Hou, 2001). Second, older immigrants do not enjoy health advantages (Gubernskaya et al., 2013; Kobayashi & Prus, 2012[5]) due to less robust health screening and migratory readiness (Gong et al., 2011); similar reasons can be cited when it

[5] Their findings show that older immigrant men do not enjoy health advantages. However, older immigrant women report better health compared to their Canadian-born counterparts.

comes to childhood immigrants (Gong et al., 2011; Gubernskaya, 2014). It is generally found that middle-aged immigrants have more health advantages over younger or older immigrants (Hill et al., 2012)[6]. Third, due to childhood adversity including economic hardships and racial discrimination, the healthy immigrant effect does not extend to second- (Das-Munshi et al., 2013) or third-generation immigrants (Acevedo-Garcia et al., 2010). Interestingly, Crosnoe (2006) shows that immigrant offspring's physical and mental health have discrepant patterns: Latino and Asian children have the worst physical health while exhibiting the best mental health compared to children of non-immigrant parents. Montazer and Wheaton (2011) find that the mental health advantages of foreign-born parents from lower GDP countries dissipate in their Canadian-born children. These result shows that intergenerational transmission of health advantages is not invariant. Fifth, immigrants in non-traditional immigrant receiving sites might be exposed to more mental health risks and have few health advantages (Kiang et al., 2010).

To summarize, this review shows that immigrants as an aggregate exhibit some mental health advantages over non-immigrants. Among immigrants, the most recent newcomers have the best health profiles, including lower depression rates and better self-rated mental health. Nevertheless, when measures of positive psychology are considered, including life satisfaction, happiness, or positive mental health, immigrants are not better off than non-immigrants. Currently, we do know more about health inequalities in distress and depression within immigrant groups, but variations of positive psychological outcomes within these groups remain underexplored. There is a general tendency in the literature to equate the absence of distress or

[6] The longitudinal study of Gubernskaya et al. (2013) has found the opposite: their American-based study finds that middle-aged have higher health risks than those migrated as children and young adults (their studies consider underexplored factors of naturalization and policy changes). The outcome variable is activity limitation rather than self-rated health or mental health. These differences might explain their rather unique findings.

depression in immigrant populations with the presence of positive mental health or good mental health. However, this assumption is seldom empirically investigated. It is possible that immigrants are in a stage free of distress or depression-related symptoms but their positive mental health has been eroded.

Also underexplored is the comparison of landed immigrant status and citizenship status on mental health. Though some comparisons have been made between economic and family class immigrants, the primary focus is on their economic outcomes (Picot, Hou, & Coulomebe, 2008; Roth, Seidel, Ma, & Lo, 2012). Currently, there is a major theoretical concern regarding refugees' mental health, but this group is often studied in isolation from economic and family-class immigrants. As a result, it is difficult for researchers to distinguish stressors unique to refugees from general stressors for all types of immigrants. The role of citizenship on immigrants' health is even more underexplored than the influence of landed programs. The American literature suggests that immigrants with worse health status are more committed to completing the naturalization process, so that they can access coverage for healthcare (Gubernskaya et al. 2013). The Canadian healthcare system is universal, and therefore the American context does not reflect Canadian immigrants' motivations to gain citizenship. Nonetheless, previous research suggests that citizenship status reflects the social positions of immigrants, as immigrants with higher human capital are more likely to claim dual citizenship (Bloemraad, 2004). Moreover, when citizenship policies are more restrictive, such as requiring a language test or longer period of uninterrupted residence, immigrants from less developed or politically unstable countries are less likely to claim citizenship (Peters, Vink, & Schmeets, 2016).

In light of this, this dissertation aims to answer the following major questions: Are mental health advantages of immigrants over non-immigrants consistent across all immigrant cohorts? Are recent immigrants' current levels of psychological distress, positive mental health, subjective well-being, and self-rated mental health better than those of long-term immigrants? Do immigrant categories and citizenship status influence immigrants' mental health?

The research hypotheses are posed as the following: (1) Recent immigrants' current levels of self-rated mental health, psychological distress, positive mental health, and subjective well-being are higher than those of non-immigrants, but long-term immigrants' current mental health is indistinguishable from non-immigrants (these hypotheses are tested using CCHS-MH 2012 and GSS-SI 2013); (2) Long-term immigrants' current levels of self-rated mental health, psychological distress, positive-mental health, or subjective well-being are lower than those of recent immigrants (these hypotheses are tested using CCHS-MH 2012 and GSS-SI 2013); (3) Economic immigrants with dual citizenship have better subjective well-being and self-rated mental health than immigrants with other landed status and citizenship status (this hypothesis is tested using GSS-SI 2013 only because CCHS-MH 2012 did not include immigrant categories and citizenship status).

2.3 Explanations for the disappearance of the healthy immigrant effect: health behavior versus social disparity

Racialized immigrants' better health conditions relative to the native-born populations strike researchers as a paradox in that they share similar race and class positions as the native-born minority, but their health conditions appear to be insulated from the negative effects of such disadvantages (William & Sternthal, 2010; Rumbaut, 1997). Even so, some researchers argue that this advantage is transitory: migration compromises relationship qualities and support

systems in the face of racism, linguistic barriers, and economic hardships (Jackson, Forsythe-Brown, & Govia, 2007; Ornelas & Perreira, 2011). The effects of migration manifest in immigrants' newly developed health problems: two years after their arrival, approximately 30% of the immigrants reported having new emotional or mental health problems (Newbold, 2009).

The two most commonly offered explanations for health disparities between recent and long-term immigrants are the social disparity and the behavioral assimilation model (also called the cultural-buffering hypothesis). The following section of the chapter will outline these two approaches, discuss how they apply to immigrants' health, and argue that an integrative model combing both explanations may be a better approach to understanding poor psychological outcomes of Canada's long-term immigrants.

2.3.1 The health disparity perspective

The social disparity perspective treats health disparities as an outcome of structural inequalities such as differences in gender, race, class, age, marital status, language ability, income adequacy, work status, and social support (Franks, Gold, & Fiscella, 2003; Pottie, Ng, Spitzer, Mohammed, & Glazier, 2008; William & Sternthal, 2010). Social disparities in health can be linked to distributive injustices such as income inequality, residential segregation, differential access to health care resources, exclusionary practices, and differences in various forms of capital (Phelan & Link, 2015).

Previous studies specifically focusing on social disparities in health have found that migration compromises immigrants' mental health through occupational downgrading (Dean & Wilson, 2009; De Castro et al., 2010), racialization and othering (Chung & Epstein, 2014; James et al., 2010; Lynam & Cowley, 2007; Mossakowski, 2003; Viruell-Fuentes, 2007), weakening of social support (Menjivar, 2000), and reduced access to healthcare (Leclere et al., 1994). These

factors have been found to be associated with migration-related stress. A recent study further confirms a higher level of chronic stress among long-term immigrants between 45 and 60 years old compared to recent immigrants of the same age cohort (Kaestner, Pearson, Keene, & Geronimus, 2009). Kasetner et al. (2009) further argue that immigrants' mental health deterioration is stress-mediated.

Health disparities by race and ethnicity are widely discussed in the sociology of health (Kessler, 1979; Kessler, Mickelson, & Williams, 1999; Williams & Sternthal, 2010). Using a social disparity perspective to study health inequalities between recent and long-term immigrants, some studies have observed that long-term immigrants become more sensitized to acts of discrimination and institutional racism[7] (Flippen & Parrado, 2015), the effect of which is detrimental to their mental health (James et al., 2010: 73). As the settlement process unfolds, immigrants begin to understand their racialized positions in the receiving society, and become less inured from the negative consequences of social and economic exclusion (Frank et al., 2010; Rumbaut, 1997).

Previous research also finds that immigrants' post-migration social support system is segmented and conflict-ridden (Aroian, 1992; Aroian, Spitzer, & Bell, 1996; Menjivar, 2000). Aroian (1992) argues that co-ethnics' support for the newly migrated is highly contingent on social situations and resource availability. While some earlier cohorts of immigrants do not deem new immigrants as deserving of their support, the latter also feel uncomfortable maintaining non-reciprocal relationships.

[7] Native-born racial minorities are also more likely to report incidences or heightened perception of discrimination than immigrants (Abdulrahim et al., 2012).

2.3.2 The behavioral assimilation model

Another major explanatory framework for the disappearance of the healthy immigrant effect is the behavioral assimilation model (also called the cultural-buffering hypothesis, which treats immigrants' health outcomes as functions of their behavioral inputs reflective of their native cultures). This approach has been used to study health differences between recent and long-term immigrants as well as immigrants and non-immigrants. The behavioral assimilation model argues that as immigrants adopt Western lifestyles and health beliefs, their dietary patterns, and levels of dependence on drugs, alcohol, tobacco, and exercise will be similar to those of the native born (Abraido-Lanza et al., 2005; Mendoza, 2009[8]; Singh & Siahpush, 2002). Higher acculturation—including losing native languages and securing fewer contacts with other foreign-born individuals—is identified in migration health research as losing the cultural buffers to maintain healthy lifestyles (Gordon-Larsen, Harris, Ward, & Popkin, 2003).[9] Studies find that due to lower retention of native culture and ethnic ties, second-generation immigrants are less healthy than their foreign-born peers (Gordon-Larson et al., 2003; Hao & Kim, 2009).

The behavioral convergence is assumed to be the primary cause for immigrants' health deterioration, though this assumption is often posed without being empirically tested (Antecol & Bedard, 2006; Kaplan, Huguet, Newsom, & McFarland, 2004). For example, Kaplan et al. (2004) suggest that immigrants' increases in BMI might be related to dietary change, but their current smoking status is the only health behavior variables included in their statistical model.

[8] On the other hand, they also have better access to health care system.

[9] For the adolescents, low acculturation is considered as considered as a risk for engaging in unhealthy lifestyles. Nonetheless, for the elderly, the very same reason--low acculturation--is perceived as a strong barrier to healthy lifestyles, including strong social isolation and inability to navigate through the health care system.

A few studies testing the cultural-buffering hypothesis and its association with health declines have found partial support for it (Finchet al., 2009; Gordon-Larsen et al., 2003; Landale, Oropesa, & Gorman, 2000), but health behavior changes (for the worse) do not always lead to negative health outcomes (Landale & Oropesa, 2001) or mediate the relationships between nativity status and health outcomes (Landale et al., 1999).

2.3.3 Towards an integrated model

The concept of cultural buffering or behavioral assimilation has received criticism for its vague operationalization of cultural differences and its inattention to ethnic heterogeneity (Virtuell-Fuentes et al., 2012; Zsembik & Fennell, 2005). One major critique of the behavioral assimilation hypothesis is that immigrants are mistakenly assumed to be carrying health-promoting behaviors from their country of origin distinctively different from, or largely uninfluenced by, the Western culture (Gutmann, 1999; Hirsch, 2003). In addition, cultural differences are inferred from ethnic groupings rather than a specific ethnicity (Zsembik & Fennell, 2005).

Moreover, specific elements of the default assumption that Western lifestyles harmful to health are often unidentified (Mirowsky & Ross, 2015). In one 2010 study, Van Hook and Baker argue that immigrant parents might not perceive risks of obesity as relevant to their children's health, especially when they come from places where risks of food scarcity and childhood malnutrition are high. Their work specifically shows that immigrants' native cultures might not always be protective (Van Hook & Baker, 2010). In short, what underlies this position is that there is little continuity of health behaviors before and after migration, despite various studies using life course perspectives arguing that some health behaviors, including food choices,

smoking, and drinking, are quite stable across life stages (Devine, 2005; Jones, Papacosta, Whincup, Wannamethee, & Morris, 2011).

Several researchers have challenged the assumption that Western lifestyles are necessarily unhealthier than non-Western ones (Akresh, 2007). For example, the study of Akresh (2007) reveals a segmented pattern of dietary change towards the better and the worse, reflecting immigrants' socioeconomic resources.

Most importantly, compared to structural dimensions such as socioeconomic status, the influence of behavioral factors is smaller (Finch, Frank, & Hummer, 2000). Furthermore, behavioral changes often constitute immigrants' responses to structural constraints, such as living in low-income neighborhoods with unsafe walking areas (Osypuk et al., 2009), living in food deserts (Gordon et al., 2011), or using substances to cope with stress (Finch, Catalano, Novaco, Vega, 2003). In short, there is a coercive side to behavioral change; Rieker and Bird (2008) call it 'constrained choice.' Oftentimes immigrants know the consequences of unhealthy behavioral choices, but their working schedules, salary, and location of work deter them from making health a priority (Castaneda, Carrion, Kline, & Tyson, 2010).

Just as the behavioral assimilation model is being criticized for its inability to address immigrants' structural constraints, social disparity perspectives are criticized for their inattention to human agency. Researchers have argued that health outcomes are co-influenced by structure and agency (Cockerham, 2005; Mirowsky & Ross, 2003). Although the social disparity perspective offers a valid point that lifestyles are not disconnected individual behaviors but an aggregate group phenomenon shaped by social locations, individuals still weigh their life choices against life chances to make optimal health decisions (Cockerham, 2005). For example, the multi-level study of Browning and Cagney (2002) suggest that neighborhood socioeconomic

disadvantage does not significantly affect residents' self-rated physical health when controlling for individual-level backgrounds. However, neighbourhood does affect resident's health through a sense of collective efficacy. The general message here is that lifestyles or health behaviors cannot be reduced to structural constraints, or simply assume that capturing structural conditions allows us to fully grasp health outcomes of individuals.

Given the criticisms against the behavioral assimilation hypothesis, a complementary framework combining elements of behavioral assimilation and social disparity perspectives argues that social stratification has a double impact on health, either directly through ascribed and achieved statuses such as gender, race, and class, or indirectly through structurally-shaped health behaviors and lifestyles (Marmot, Ryff, Bumpass, Shipley, & Marks, 1997; Gordon-Larsen et al., 2003; Osypuk et al., 2009; Segall & Chappell, 2000; Zunzunegui et al., 2006). In short, these studies note that health behaviors are derivatives of social statuses and should not be considered sole determinants of health. For example, research guided by this complementary framework argues that migration can sometimes reduce immigrants' life chances (Frank, Akresh, & Redstone, 2010; Stewart & Dixon, 2010; Zhou & Xiong, 2005), and as a result immigrants lose social resources to keep up with their health routine (Akresh, 2007; Martin, Van Hook, & Quiros, 2015).

A few other studies testing both the cultural-buffering and the social disparity hypothesis find that changes in health behaviors reflect immigrants' socioeconomic resources (Akresh, 2007; Martin et al., 2015), or residential segregation (Osypuk et al., 2009). Martin et al. (2015) argue that immigrants are segmented into different socio-economic stratums, where well-resourced immigrant families can ensure healthy dietary practices while impoverished immigrant families opt out for low quality diet. Based on Portes' and Zhou's (1993) segmented assimilation

theory, both Martin et al. (2015) and Akresh (2007) find support for segmented behavioral assimilation and its connection to health disparities.

The following sections introduce two variants of the social disparity perspectives, including the social determinants of health perspective and the Stress Process Model. Both perspectives emphasize the importance of structural constraints and individual resources. For example, the social determinants of health perspective considers the fundamental structural conditions (gender and race), coping resources (social support), and health behaviors as unrelated independent influences on mental health, while the stress process perspective considers all of these elements as interconnected parts, where coping resources and health behaviors are shaped by the structural conditioning.

2.4 Social determinants of health perspective (SDOH)

As a variant of the social disparity perspectives, the social determinants of health (SDOH) framework is commonly used to compare the relative importance of behavioral, psychosocial, and structural determinants in explaining health outcomes (Denton & Walter, 1999; Denton, Prus, & Walter, 2004; Newbold, 2005; Prus, 2011). This framework is suitable for explaining the influence of health behaviors and structural inequalities on immigrants' health outcomes, since race and class are factors of social stratification linking demographic factors to health outcomes (Link, 2008; Nomaguchi & House, 2013; Phelan & Link, 2015; William, 2012; William & Sternthal, 2010).

Among immigrant populations, landed immigrant status, age, gender, marital status, race, education, language ability, income adequacy, and work status are the major structural determinants of health, social support as psychosocial resources, while smoking behaviors, physical inactivity and medical consultations are primary behavioral determinants of health

(Newbold, 2005, 2009; Newbold & Danforth, 2003; Prus, 2011). Recently, researchers using SDOH perspective have argued that some health determinants are more primary than the others (Kosteniuk & Dickinson, 2003). For example, Kosteniuk and Dickinson assert that socioeconomic and demographic factors are more fundamental than psychosocial resources. Robert and Gilkinson (2012) suggest that socio-demographic, socio-economic, and psychosocial variables are different groupings of social determinants of health, and should be presented as separate conceptual blocks in regression models.

Based on the social determinants of health (SDOH) perspective, this dissertation asks: what is the relative importance of behavioral, psychosocial, and structural determinants of health on Canadian immigrants' mental health deterioration, including self-rated mental health, psychological distress, positive mental health, and subjective well-being? To what extent are the cultural buffering hypothesis, social disparity perspectives, and a combined framework of both empirically supported? Guided by previous literature, the research hypothesis is posed as follows: (1) Demographic, socio-economic, and psychosocial determinants have greater explanatory power in the context of Canadian immigrants' mental health than behavioral determinants; (2) The framework that combines both cultural buffering and social disparity insights best describes Canadian immigrants' mental health status; (3) Demographic and socio-economic determinants (upstream or primary structural determinants) have greater effects on mental health than psychosocial determinants.

2.5 The Stress Process Model

Similar to the social determinants of health framework, the Stress Process Model also considers the underlying patterns of social disparity. The stress process paradigm first appeared in the 1980s, arguing that mental health risks are unevenly distributed across social groups

(Aneshensel, 2009; Mabry & Kiecolt, 2005; Pearlin, 2010; Pearlin, Menaghan, Lieberman, & Mullan, 1981; Thoits, 1995, 2010; Turner & Lloyd, 1999). Pearlin's (1989) Stress Process Model particularly emphasizes the structural context that defines the living conditions of individuals who are subjected to various degrees of risk and protective factors. The original stress process framework captures a series of interconnected components including stressors, coping resources, and psychological outcomes (Pearlin et al., 1989).

Though both the social determinants of health framework and Stress Process Model share the theoretical assumptions that risks and resources are shaped by one's social locations, these two conceptual frameworks differ in a fundamental way: in the Stress Process Model, social support or interpersonal strain are considered downstream factors shaped by less modifiable upstream factors such as gender, class, race, and age (Aneshensel, 2009), whereas the social determinants of health framework does not distinguish primary determinants from secondary ones. Another major difference is that the Stress Process Model is mostly applied to mental health, while the social determinants of health framework is used to evaluate both physical and mental health. Lastly, the behavioral aspects of health are more emphasized in the social determinants of health framework than in the Stress Process Model[10]. The major strength and flexibility of the Stress Process Model is that it combines both stress and coping into one single model, instead of investigating each discrete component in separate models (Wheaton, 2010).

[10] An exception is the work of Aneshensel and Huba (1983), who looked at how depression affects substance use behavior and the reciprocal relationship between the two in a longitudinal study design.

2.5.1 The differential exposure to psychosocial demands and accumulation of psychosocial resources

The stress process paradigm has been incorporated into studies focusing on mental health inequalities among ethnic groups and visible minorities (Harrell, 2000; Jackson et al., 2010; Ong, Fuller-Rowell, & Burrow, 2009; Mossakowski & Zhang, 2014). Yet, only a handful of studies utilizing the Stress Process Model focus exclusively on the mental health of immigrants (Noh & Avison, 1996; Ritsner, Modai, & Ponizovsky, 2000; Shin, Han, & Kim, 2007). The work of Noh and Avison (1996) is one of the earlier studies employing the stress model to study immigrants' mental health. It generally supports the model's applicability to immigrants.

Though migrant health studies rarely incorporate the Stress Process Model, the protective effects of social support and the harmful effects of interpersonal strain on immigrants' mental health are the major research theme (Piedra & Engstrom, 2009; Wolf, 1997). A major source of interpersonal strain comes from discrepant intergenerational values, gender ideologies, and ethnic identification among family members (Flores, Tschann, VanOss, & Pantoja, 2004; Piedra & Engstrom, 2009; Phinney, Ong, & Madden, 2000). With the increasing duration of migration, the discrepancies grow and interpersonal conflicts develop further (Phinney et al., 2000), revealing a pattern of higher exposure to psychosocial demands among long-term immigrants. This group of studies is useful in aiding our understanding of immigrants' psychosocial resources and demands when applying the Stress Process Model to the context of migration.

There are three major types of research findings on the strength or weakness of immigrants' social support networks. The first type of findings suggests that immigrants' family or ethnic networks are tightly knit self-reliant, and cooperative (Lutz & Crist, 2009; Pyke & Bengtson, 1996). The second type indicates that, although immigrants' social ties are supportive, these ties

can be conflict-ridden, non-reciprocal, and constraining (Espiritu, 2003; Kibra, 1994). An overreliance on co-ethnic ties, as most of the family immigrants are driven to build, can inhibit immigrants from participating in mainstream society and economy (Roth et al., 2012). Most immigrants do not perceive their relationships with relatives as reciprocal, since most of them report offering more help than receiving it (Jackson et al., 2007; van de Vijver & Arends-Toth, 2009). The third type of findings notes the fragile and fragmented nature of immigrants' social ties (Menjivar, 2000). These studies reveal the circumstances under which immigrants have to be highly selective of close relatives and friends. As a result, length of migration does not always lead to stronger social ties. For example, Jackson et al. (2007) find that frequency of family contact, closeness to family, and emotional support remain similar across first-generation immigrant cohorts. However, other studies suggest that immigrants' social ties are only disrupted temporarily, as most immigrants are able to re-develop their social networks later in life (Kao & Tsai, 1986; Newbold, Watson, & Ellaway, 2015).

In the past two decades sociologists of health have begun to emphasize the coexisting nature of social support and negative interactions (Finch, Okun, Pool, & Ruehlman, 1999; Fiori, Windsor, Pearson, Crisp, 2013; Horwitz, McLaughlin, & White, 1998; Ingersoll-Dayton, Morgan, & Antonucci, 1997; Lepore, 1992). The coexistence of positive and negative feelings toward social relationships is identified as ‘interpersonal ambivalence (Connidis & McMullin, 2002; Villatoro & Aneshensel, 2014)’ or ‘positive and negative social capital (Portes, 1998)’. Various studies have indicated that when considering the effects of gender, race, and class, psychosocial resources and demands are not equally distributed among immigrant networks (Dominguez & Watkins, 2003; Wacquant, 1998). For example, some studies argue that women,

racial minority and low-income persons' social ties are more demanding than others' (Buller, 2001; Dominquez & Watkins, 2003).

In light of the ongoing debate on the impact of migration on immigrants' social networks, this dissertation employs the Stress Process Model to answer the following questions regarding differential accumulation of psychosocial resources and differential exposure to psychosocial demands. The differential accumulation and exposure to resources and demands are potential pathways to mental health inequalities between recent and long-term immigrants.

1) Do long-term Canadian immigrants have better social support than the most recent immigrants (differential accumulation)?

2) Conversely, I ask: Do long-term Canadian immigrants experience more interpersonal strain than the most recent immigrants (differential exposure)? I hypothesize that long-term immigrants have stronger social support and interpersonal strain than recent immigrants.

The next set of questions investigate if the differential accumulation of psychosocial resources and exposure to psychosocial demands (pathways) are translated into the mental health differences between recent and long-term immigrants.

1) Does length of migration have a direct effect on Canadian immigrants' self-rated mental health, psychological distress, and positive mental health?

2) Does interpersonal strain mediate the relationship between length of migration and Canadian immigrants' mental health (indirect effect)?

3) Does social support suppress the relationship between length of migration and Canadian immigrants' mental health (indirect effect)?

4) Does social support buffer the negative effects of interpersonal strain on psychological distress, self-rated mental health, and positive mental health (or alternatively, does social support

moderate the relationship between interpersonal strain and mental health for Canadian immigrants)?

5) Does interpersonal strain have a greater effect on psychological distress, self-rated mental health, and positive mental health than social support?

The following corresponding hypotheses are:

1) There is a direct association between length of migration and Canadian immigrants' psychological distress, positive mental health, and self-rated mental health.

2) The associations between length of migration and the abovementioned psychological outcomes will diminish when interpersonal strain is included in the equation (mediation/indirect effect).

3) The effects of migration on the abovementioned psychological outcomes will become stronger after social support enters into the equation (suppression/indirect effect).

4) Social support buffers the negative effects of interpersonal strain on psychological distress, positive-mental health, and self-rated mental health (or alternatively, social support and interpersonal strain have an interaction effect) (moderation).

5) The effect of interpersonal strain on the abovementioned psychological outcomes is greater than that of social support.

2.5.2 Pathways to health deterioration: the effect of psychosocial resources and demands

The Stress Process Model contributes to articulating the role of psychosocial resources and demands as mediators or moderators between stressors and psychological outcomes (Pearlin & Bierman, 2013; Young, 2015). According to Baron and Kenney (1986), a mediator has an association with both the independent and dependent variable, and the inclusion of such a mediator reduces the magnitude of the association between the independent and dependent

variable. Empirically, the Stress Process Model relies on the mediation analysis to determine the direct effects of significant life event, such as migration, on mental health, and its indirect effects on mental health through the changing level of psychosocial resources.

Moderation is a statistical outcome that is empirically distinctive from mediation. Unlike mediators, which are associated with both with the independent and dependent variables, moderators do not need to fulfill such a requirement. A moderator such as social support is considered as a static psychosocial resource, unaffected by the event of migration. For example, some immigrants have high and low social support prior to migration and when it is modeled as a moderator, their level of social support is unchanged by the event. When moderation occurs, immigrants with high social support will have enough psychosocial resources to buffer against the stress associated with migration, whereas those with low social support will not. In contrast to the case of mediation, where the magnitude of the association between migration and mental health is altered by immigrants' social support, the operation of moderation alters the direction of the relationships between migration and mental health. For example, low social support might make the direction of the relationship between migration and mental health steeper (further deterioration) compared to those with high social support.

Along with occurrences of mediation and moderation, researchers also consider the possibility of suppression. In their original piece, Baron and Kenney (1986) did not discuss this specific statistical outcome, but researchers using the Stress Process Model have discussed the concept of suppression extensively (Aneshensel, 2002; Schieman, 2009; Schieman & Reid, 2009). Suppression occurs when an independent and dependent variable have no initial association, but its association becomes apparent when suppressors are included in the equation. For example, migration and psychological distress might have no initial association, but when

social support is included in the equation, longer duration of migration is associated with higher psychological distress. This paradox happens because long-term immigrants are able to grow their social ties, and as a result these ties can reduce the occurrence of psychological distress.

The following examples illustrate the possibilities of social support as a suppressor in the context of migration. Interpersonal strain is proposed as either a mediator, as current literature suggests that longer duration of migration is associated with higher interpersonal conflict, and that immigrants experience more interpersonal conflicts have worse mental health (Phinney et al., 2000).

Figure 2.1 and Figure 2.2 show two types of mediation (partial and full mediation) involving the increase of interpersonal strain and mental health risks after migration. In Figure 2.1, longer duration of migration increases interpersonal strain for Canadian immigrants, which in turn increases mental health risks. However, the inclusion of interpersonal strain does not fully take away the focal association between years of migration and mental health risks. The association between years of migration and mental health risks remains but the size of association is reduced, resulting in partial mediation. For example, in Figure 1, the focal association is positive and has a coefficient a1. After the inclusion of interpersonal strain (mediator), the focal association remains, but the size of the coefficient reduces to a2. The total effect of years of migration on mental health risks is: a2+b+bc, which is larger than a1.

In Figure 2.2, however, the inclusion of interpersonal strain fully takes away the focal association between years of migration and mental health risks, causing the full mediation to occur. In case of full mediation, the effect of years of migration on mental health risks is entirely channeled through interpersonal strain. Both Figure 2.1 and Figure 2.2 illustrate the possibility of stress proliferation in the context of migration. Migration in and of itself is a significant life

event placing immigrants in a new set of social organizations and roles. As a result, some studies argue that migration itself is a risk factor (hereafter primary stressor). Meeting new socio-environmental demands post-migration requires immigrants to reconfigure their relationships with others, which leads to a secondary stressor, interpersonal strain. Pearlin and Bierman (2013) argue that stress proliferation occurs when primary stressors activate secondary stressors in ways that increase mental health risks.

Figure 2.1 Partial Mediation

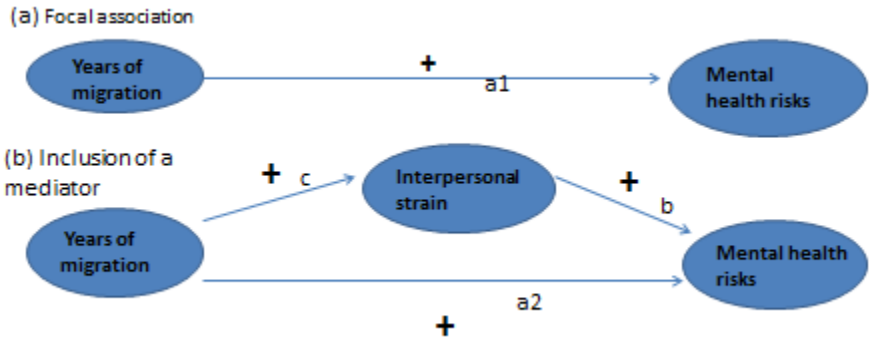
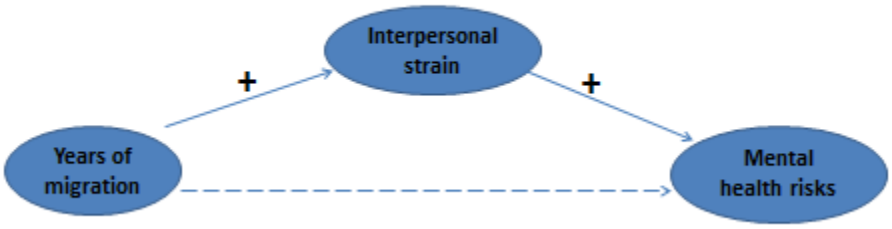


Figure 2.2 Full Mediation



The role of social support in mediating the effects of stressors on psychological outcomes is central to the mental health literature (Pearlin, 1989; Broman, Hamilton, & Hoffman, 2001; Evans, Palsane, Lepore, & Martin, 1989; Lepore, Evans, & Schneider, 1991; Kim, 2010;

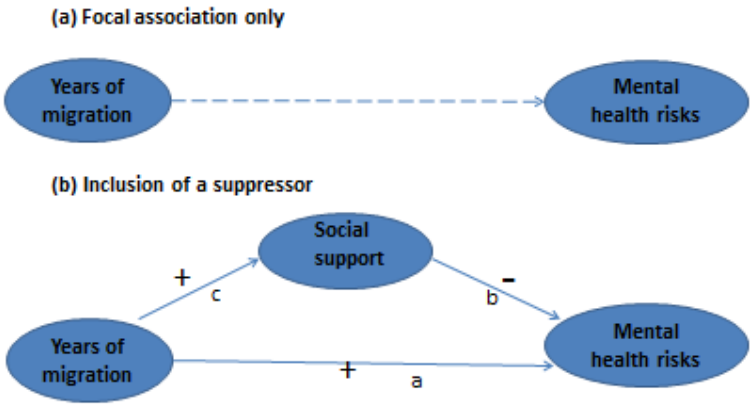
Wheaton, 1985). Previous studies have articulated how significant life events can erode social support and compound mental health through diminished social support (Atkins, Liem, & Liem, 1986; Taylor & Lynch, 2004). Nevertheless, in the context of migration, it is not entirely clear whether longer duration of migration reduces or increases social support. Since my thesis looks at the general immigrant population (mostly of them are voluntary immigrants), rather than immigrant groups living their home country due to economic or political displacement, it is more reasonable to assume that social support suppresses or moderates the relationship between years of migration and psychological outcomes.

Figure 2.3 shows the example of suppression where the initial focal association is absent, but becomes visible after the inclusion of a third variable, social support[11]. The suppression of the focal association between years of migration and mental health risks occurs because the influence of social support masks the real relationship between the focal independent and dependent variables. The inclusion of social support in the model means taking into consideration the relationship between the focal independent variable (years of migration), the suppressor (social support), and the relationship between them. Figure 2.3 shows the case of full suppression where the negative association between social support and mental health risks is strong enough to cancel out the positive association between years of migration and mental health risks. For example, in Figure 2.3(a), we observe no focal association between years of migration and mental health risks; however, when social support enters the relationship (Figure 2.3(b)), the focal association becomes visible. In addition, we also observe associations between

[11] Suppression is also called inconsistent mediation because the first requirement of a significant focal association is not fulfilled, but upon the inclusion of the third variable, association emerges between a focal independent variable, suppressor, and a focal dependent variable (Aneshensel, 2013). I prefer the term suppression over inconsistent mediation.

years of migration and social support, as well as social support and mental health risks. The size and the direction of association are important conditions causing suppression effects to occur. The total effect of years of migration on mental health risks is a-b-bc. If the size of a is close to b+bc, then suppression occurs. In short, were it not for the suppression effects of social support on mental health risks, we would have observed an association between years of migration and mental health risks.

Figure 2.3 Full suppression (social support as suppressor)

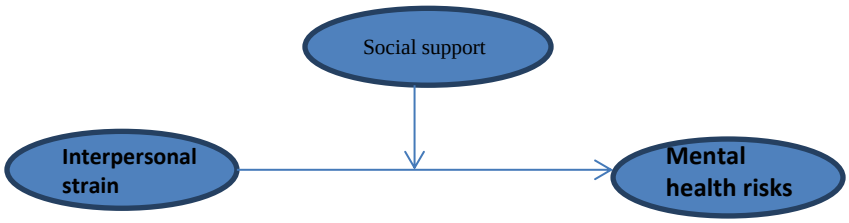


One the other hand, moderation effects occur when the presence of a moderator changes the relationship between an independent and dependent variable (Baron & Kenney, 1986). According to Atkinson et al. (1986), a moderator such as social support is often modeled as a relatively stable variable in the stress-buffering process. The effect of an independent variable on a dependent variable varies across or is conditional on the levels of a moderator. In other words, moderators can also be interpreted as 'effect modifiers' (Kraemer, Stice, Kazdin, Offord, & Kupfer, 2001), and the notion of psychosocial resources acting as buffers against the negative

effects of external stressors on psychological outcomes is well-supported by the mental health literature (Lepore et al., 1991; Noh & Kaspar, 2003; Wickrama & Bryant, 2003).

The moderating role of social support in the relationship between interpersonal strain and mental health risks is presented in Figure 2.4. Both interpersonal strain and social support have main effects on mental health risks. However, when considering the moderating effect of social support on the association between interpersonal strain and mental health risks (or alternatively, the interaction between interpersonal strain and social support on mental health risks), the effect of interpersonal strain on mental health risks is larger for immigrants with lower social support than it is on those with higher social support.

Figure 2.4 Moderation



2.5.3 The competing effect of social support and interpersonal strain on mental health

Compared to the strong emphasis on the beneficial effects of social support on immigrants' life conditions, Portes (1998) argues that negative social capital, such as rigid informal social control, is often downplayed in empirical migration studies. Empirically, previous studies have found that interpersonal conflicts coexist with supportive exchanges (Akiyama, Antonucci, Takahashi, & Langfahl, 2003; Antonucci, Akiyama, & Lansford, 1998; Liang, Krause, & Bennet, 2001; Lincoln & Chae, 2012; Okabayashi, Liang, Krause, Akiyama, Sugisawa, 2004; Silver, Worthman, & Crofton, 1990), especially in the context where interactions among

members are high and involuntary (Akiyama et al., 2003). A few studies have suggested that negative social interactions in some relationships tend to have a long-term nature (Krause & Rook, 2003; Akiyama et al., 2003). For example, Krause and Rook (2003) have found that unpleasant social interaction can persist up to six months and can thus be conceptualized as chronic strain.

In the context of immigrants' health, Chung and Epstein (2014) find that social support does not buffer the effects of stressors, such as racial discrimination, on distress for Asian immigrants, but interpersonal strain exacerbates the positive relationship between stressors and distress. This finding suggests that some groups of immigrants are particularly affected by the presence of negative social interactions.

Although the stress process paradigm incorporates the element of negative social interactions, the link between chronic strain, social support, and negative social exchanges on mental health is unclear. For example, mixed results are found with respect to the positive effect of supportive exchanges on positive mental health and the negative effect of conflictual social interactions on distress (Okabayashi et al., 2004). Some studies suggest that negative social exchanges should have a more deleterious effect on mental health than the protective effects of social support (Horwitz et al., 1998; Ingersoll-Dayton et al., 1997; Rook, 1984), while others argue that the effects of both perceived support and negative interaction on mental health are comparable (Finch et al., 1999)[12].

Depending on the characteristics of individuals, Kawachi and Berkman (2001) argue that, within a set of bounded social networks, those with lower level of resources might experience

[12] My analysis of CCHS-MH data shows that social support has smaller effects on distress than negative social interaction. The results of CCHS-MH data support Ingersoll-Dayton et al (1997) and Rook (1990). Negative social interaction has a smaller effect on positive mental health than it has on distress. I will show you the models.

more negative social interactions such as interpersonal demands, relative to the social support they enjoy. If this rings true, it is possible that immigrants, who tend to have fewer resources, will develop more interpersonal strain or suffer from stronger informal social control, and the mental health risks resulted from the interpersonal demands might not be cancelled out by the positive effects of social support.

2.6 The role of age at migration and life course in the stress process

Previous research suggests that the healthy immigrant effect is stronger for adult immigrants than for immigrant youth (Vang, Sigouin, Flenon, & Gagnon, 2015). Current research does not have conclusive findings on how immigrant youth fare compared to non-immigrant youth. In an Ontario-based study, Hamilton, Noh, and Adlaf (2009) found that first-generation immigrant children experience more psychological distress than their second-generation peers. Other national-level studies suggest that immigrant youth have mental health advantages over their Canadian-born counterparts (Beiser et al., 2002; Kwak, 2016).

Immigrant youth may have good mental health upon arrival, but this pattern is transient. Extant research indicates that migration in childhood or adolescence is associated with worse mental health in adulthood (Gong et al., 2001; Veling, Hoek, Selten, & Susser, 2011). This finding is perplexing, as migration in childhood is beneficial to adult attainments, including stronger economic outcomes and education levels (Allensworth, 1997; Beck, Corak, & Tienda, 2012), which in turn improve access to health services and enhance health-promoting behavior. However, a recent article indicates that benefits and risks of assimilation go hand in hand, since adolescents living in good neighborhoods have better educational outcomes and are at higher risks of substance misuse (Xie & Greenman, 2011).

Most literature on the healthy immigrant effect emphasizes the effects of duration of migration on health without considering the effects of age at migration (Gong et al., 2011; Gubernskaya, 2014; Gubernskaya et al., 2013). Therefore, Gong et al. (2011) suggest that life course perspectives are important for researchers to understand the forces of timing at migration on immigrant youth's mental health as they reach adulthood.

Life course perspectivs emphasize the timing and sequence of events (Elder, 1994). According to Elder (1994), the social timing of events influences each individual's life trajectory. Childhood migration leads to dramatically different challenges than migration as an adult. For adults, language barriers and employment concerns are the major migration-related stressors (Ding et al., 2011). For school-age children, age-salient developmental tasks, including pursuing peer-oriented relationships, handling intergenerational conflicts, and developing cognitive and emotional skills (Glick, Walker, & Luz, 2013; Nguyen, Rawana, Flora, 2011; Hao & Woo, 2012), are their major migration-related challenges.

Family poverty and prolonged family separation are common experiences for immigrant children (Beiser et al., 2002; Das-Munshi et al., 2013; Seglem, Oppedal, & Roysamb, 2014; Suarez-Orozco, Todorova, & Louie, 2002). Based on the 2006 Canadian Census, the average poverty rate for the Canadian-born was 13.8%, whereas it was 22% for the foreign-born (Shields, Phillip, Prier, & Fang, 2011). The economic realities for immigrant children were more striking. The child-poverty rate for Canadian-born children was 17%, while it was 52% for immigrant children migrating to Canada between 2002 and 2006 (Shields et al., 2011). According to Suarez-Orozco et al. (2002), 85% of 385 immigrant youth respondents experienced family separation from 2 to 5 years.

Childhood adversities contribute to negative life events, atypical life transitions, intergenerational transference of stress, and low psychosocial resources (Das-Munshi et al., 2013; Perreira & Ornelas, 2013; Seglem et al., 2014). For example, Anisef, Brown, Phythian, Sweet, & Walters (2010) found that immigrant youth in Toronto secondary schools had higher dropout rates due to family poverty. Rumbaut (2005) also found that male immigrant youth from Mexico, Columbia, Puerto Rico, or Africa, have a higher chance of being incarcerated than those from Asia and Europe; while female immigrant youth from Dominica, Mexico, Puerto Rico, and El Salvador experience higher rates of teenage pregnancy relative to those from Africa, Asia, and Europe.

The concept of 'linked lives' is another major component of the life course perspective (Elder, 1994), which is essential to studying immigrant children, as they tend to migrate with their family. Beiser et al. (2002) have found that the effect of poverty on parental depression is larger in immigrant families than in non-immigrant ones. Recent studies have found that stress proliferates generationally, as children tend to share their parents' emotional problems (Dreby, 2012; Turney, 2014). Immigrant children also share their parents' economic roles. In economically disadvantaged families, children are exposed to adult knowledge and assume a large role in meeting family demands (Burton, 2007). Previous research argues that immigrant children are major contributors to household economies (Orellana, 2003). The range of household activities immigrant children perform include language brokering, housework, and taking care of younger siblings (Dorner, Orellana, & Jimenez, 2008; Hafford, 2010; Orellana, 2003; Pyke, 2005; Valenzuela, 1999).

For immigrant youth, helping their family settle in the receiving society comes with psychological benefits and penalties. In contrast to the cultural construction of children as

'economically useless' and 'emotionally priceless' (Zelizer, 1985), immigrant children are perceived by their parents as 'assets' (Orellana, Dorner, & Pulido, 2003) or 'advocates' (Valenzuela, 1999) for their family. Some studies indicate that it compromises mental health (Hua & Hostigan, 2012; Martinez, McClure, & Eddy, 2008), while others suggest that it increases cognitive and emotional competence (Dorner, Orellana, & Jimenez, 2007; Telzer & Fuligni, 2009). In cases where parents rely on children for language brokering or household matters, parents report having lower parental effectiveness (Martinez et al., 2008), while children report higher parent-child conflicts (Hua & Costigan, 2012) or conflicts with siblings (Pyke, 2005).

Migration in childhood implicates the level of social support in adult lives. Suarez-Orozco, Rhodes, & Milburn (2009) indicate that some groups of minority youth, such as Chinese and Mexican students, have less relational engagement than the others. Tsai (2006) argues that immigrant youth with limited English proficiency deliberately distance themselves from their native-peers to avoid embarrassment, but doing so contributes to social isolation. As reported by earlier studies, first-generation immigrants are more committed to maintaining family relationships than to developing friendships; as a result, their social networks are small and comprised of more family members than the native-born (van Tubergen, 2014). Vaquera and Kao (2008) have found that immigrant children have fewer reciprocal friendships than the native-born. Immigrant children are also likelier to experience reciprocal relationships with friends from their own ethnic backgrounds (Vaquera & Kao, 2008).

Though migration in childhood comes with a number of vulnerabilities, previous research also argues that immigrant families are resilient and are able to formulate effective coping strategies. Beiser et al. (2002) have shown that, in the face of poverty, immigrant children have

fewer behavioral and emotional problems compared to the native-born. They argue that poverty does not affect parenting effectiveness in immigrant families, which is a protective factor against behavioral and emotional problems. It is also indicated that family closeness is higher in the first-generation immigrant families than second- and third- generation families (Bacio, Mays, & Lau, 2013).

Previous research has indicated that immigrant status is associated with better health behavior for immigrant youth, including alcohol use and drug use (Blake, Ledsky, Goodenow, & O'Donnell, 2001; Gfroerer & Tan, 2003; Salas-Wright, Vaughn, Clark, Terzis, & Cordova, 2014). Immigrant mothers across nationalities, races and ethnicities also exhibit better health behaviors than their native-born counterparts (Jackson, McLanahan, & Kierna, 2012). There is a gradient effect of parental nativity status on health behaviors. Acevedo-Garcia, Pan, Jun, Osypuk, and Emmons (2005) found that first-generation immigrants with two foreign-born parents smoke the least, while the native-born with two native-born parents smoke the most, and second-generation immigrants with two foreign-born parents fall in between the two. However, explanations as to why immigrant status reduces unhealthy lifestyles vary. Some literature finds support for negative behavioral assimilation, suggesting that long-term immigrants, particularly those migrating before adulthood, adopt Western lifestyles (Lopez-Gonzalez et al., 2005; Kimbro, 2009). Others suggest that segmented assimilation, such as neighborhood socio-economic contexts, explains disadvantages immigrants' behavioral changes (Akresh, 2007; Eitle, Wahl, & Aranda, 2009; Ra, Cho, & Hummer, 2013). For example, Eitle et al. (2009) suggest that selective acculturation—conservation of selective elements of native culture and language—reduces problematic health behaviors. A higher concentration of foreign-born peers in immigrant

youth's social network also plays a role in health promotion. Bacio et al. (2013) have found that the first generation immigrant youth are less likely to befriend with peers who use substance.

In short, migration in childhood comes with various risk and protective factors that promote or compromise mental health. The life-course timing of migration may determine the differential exposure to risk and protective factors of mental health. However, limited research has explored how risk and protective factors associated with childhood migration operate as pathways to mental health deterioration. In light of these contradictory patterns of integration, my thesis aims to address the following questions:

1) Is migration in childhood or adolescence associated with higher psychological distress?

2) Is migration at a younger age associated with worse health behavior?

3) Does migration at a younger age help immigrants develop stronger social support and greater interpersonal strain?

4) Can health behavior and psychosocial resources/demands explain childhood or teenage immigrants' higher psychological distress in adulthood?

The corresponding hypotheses are proposed as follows:

1) Immigrants who migrated as children or adolescents have higher psychological distress than those who migrated as adults

2) Immigrants who migrated as children or adolescents have higher lifetime risks of substance use and are more likely to have smoked and drank in the past 12 months than those who migrated as adults

3) Compared to migration in adulthood, migration in childhood or adolescence is associated higher exposure to interpersonal strain but also stronger social support.

4) Both health behavior and psychosocial resources/demands reduce the gap in psychological distress between childhood/teenage immigrants and adult immigrants, but the effect of psychosocial resources/demands on psychological distress is larger than that of the health behavior.

2.7 Chapter summary

Studies focusing on the healthy immigrant effect pay significant attention to the migration duration effect on mental health. However, there is not enough research on what structural factors shape immigrants' mental health. To contribute to the current literature, I use a social determinants of health framework to examine what types of structural factors and behavioral inputs affect immigrants' mental health.

There is also scant research on how mental health deterioration in the immigrant population occurs. Based on the social determinants of health perspective, psychosocial resources and demands are the major determinants of mental health. To investigate if social support and interpersonal demands are the pathways to mental health deterioration, I use the Stress Process Model to guide my analysis, to examine if they mediate or moderate the relationship between migration and psychological outcomes.

Lastly, I include age at migration in the analysis to further explore if length of migration continues to play a role in influencing immigrants' mental health. Using life course perspectives, I investigate if migration at particular age period increases exposure to specific risk and protective factors such as substance use, interpersonal stress, and social support, and whether or not these health risks and benefits translate into worse psychological outcomes.

Chapter 3: Data and Methods

To examine Canadian immigrants' various psychological outcomes, this dissertation utilizes two cross-sectional national level datasets. The first is the Canadian Community Health Survey, Mental Health 2012 (CCHS-MS) and the second is the General Social Survey-Social Identity 2013 (GSS-SI). As stated previously, CCHS-MS 2012 has measures of health behaviors, social resources, and various psychological outcomes, but it lacks more detailed immigrant background, such as the landed programs and citizenship status. The GSS-SI 2013 is thus included in this dissertation to get a more holistic picture of immigrant categories and mental health.

To investigate the healthy immigrant effect for mental health (nativity effect and duration effect), I used both CCHS-MS 2012 and GSS-SI 2013. The control variables were comparable between CCHS-MH 2012 and GSS-SI 2012, but explanatory and response variables varied. For example, CCHS-MH 2012 included the concept of psychological distress and positive mental health, excluding the measure of subjective mental health. GSS-SI 2013, on the other hand, included the concept of subjective mental health without measuring psychological distress or positive mental health.

Explanatory variables also varied, as only GSS-SI 2013 included information on immigrants' landed programs and citizenship status. To test hypotheses guided by the social determinant of health perspective, the Stress Process Model, and the life course perspective, only variables from CCHS-MH 2012 were used. Table 3.1 presents the description of the variables derived from CCHS-MH 2012 and GSS-SI 2013 (The notation "x" means no comparable variables).

3.1 The Canadian Community Health Survey, Mental Health 2012 (CCHS-MS)

3.1.1 Sources of data

The 4,282 immigrant sample of this study was extracted from the Canadian Community Health Survey, Mental Health 2012 (CCHS-MS). The sample size of the entire Canadian sample is 12,113, with a response rate of 86.3%. The cross-sectional and stratified cluster design covers respondents of 15 years old and over in all Canadian provinces, excluding individuals living on reserves and other Aboriginal settlements, full-time Canadian Forces members, and individuals currently institutionalized. Missing values of the immigrant samples were imputed by multiple imputation methods.

3.1.2 Variables

a. Response variables

The first response variable of this study is psychological distress, measured by Kessler Distress Scale (K10). The scale measures non-specific psychological distress for nonclinical population. This scale involves ten five-point questions asking respondents to report the frequency of their distress levels. Table 3.2 provides a description of individual items, the range of the scale, and the internal consistency level. All items were rescaled from 1-5 to 0-4, so that 0 represents “none of the time”, 1 “a little of the time”, 2 “some of the time”, 3 “most of the time,” and 4 “all of the time.” The total score of K10 is 40 (α=0.85). However, due to the highly right-skewed distribution of distress scores in the Canadian immigrant population, I used square root transformation to make the distribution more normally distributed. Log transformations are also part of the solution to decrease skewness. Nevertheless, in the case of Canadian immigrant samples, square root transformation is a more powerful transformation method than log transformation according to the diagnosis of Stata 13. Other scholars who note the right-skewed

distribution of distress levels in the population also perform square-root transformation (Dziak, Janzen, & Muhajarine, 2010) or log transformation (Scheffler , Brown, & Rice, 2007; Zhang, Hong, Takeuchi, & Mossakowski, 2012; Yip, Gee, & Takeuchi, 2008) to reduce skewness.

The second response variable is positive mental health, which is a scale created by Keyes (2002). The factor structure of the positive mental health scale includes three dimensions: emotional, psychological, and social well-being (Keyes, 2005). The positive mental health scale is the summative score of 14 items, with a total score of 70 (α=0.86). The descriptions of each item are presented in Table 3.2. Each item involves a 6-point response scale (1-6). All items were rescaled and reversed-coded from 1-6 to 5-0. Lower scores reflect worse positive mental health, and higher scores reflect better positive mental health. The distribution of positive mental health is skewed to the left. However, I did not perform square transformation, as patterns of regression analysis before and after square transformation did not vary.

The third main response variable is self-rated mental health, which is a single-item question asking respondents to report their current mental health status in the following categories: excellent, very good, good, fair, or poor. Because very few immigrants rated their mental health as poor, I merged fair and poor into one category 'fair to poor'. The self-rated mental health variables are rescaled and reverse-coded, so that 0 means poor to fair, whereas 3 means excellent self-rated mental health.

b. Explanatory variables

Explanatory variables include continuous variable and categorical variables. Continuous variables in this study include social support and interpersonal strain. Table 3.2 shows the item descriptions of the social support and interpersonal strain scale as well as the internal consistency. Social support is measured by ten 5-Likert scale questions. Each item is reverse-

coded from 5-1 to 1-5. The scale ranging from 10 to 40 is the summative score of these 10 questions (α=0.93). The mean of the social support score is higher than the median, resulting in a right-skewed distribution. As a result, I apply square root transformation to make the distribution appear more normally distributed. The skewness is less severe, but transformation does not eliminate the bimodal nature of the distribution. Interpersonal strain (negative social interaction) is the summate score of four 5-Likert scale questions (α=0.81). The distribution of interpersonal strain is skewed to the left, so I performed square root transformation to reduce the skewness.

Categorical variables include years of migration, age at migration, and health behavior. Since previous studies have indicated that the relationship between migration and mental health is non-linear (Hurh & Kim, 1990; Tran, Manalo, & Nguyen, 2007), I recoded years of migration into a categorical variable, with each category representing ten years of residence in Canada. To distinguish the unique acculturation experiences of immigrant children from those of adult immigrants, migrant literature generally define them as the '1.5 generation' (Rumbaut, 2004). Currently, there is no clear guideline on the cutoff age for the 1.5 generation, but the cutoff age typically ranges from 12 to 15 (Gonzales & Chavez, 2012; Rumbaut, 2004). However, the 1.5 generation is not a homogenous group. For example, researchers argue that among immigrant children of the 1.5 generation, those arriving before 8 and after 8 may have different English-acquiring experiences and educational trajectories (Beck et al., 2012). As a result, based on the age at arrival, I divided the 1.5 generation immigrants into 2 categories: before 8 (childhood), between 9 and 13 (early adolescence). I also divided the first generation into 4 categories: between 14 and 21 (middle to late adolescence), between 22 and 30 (emerging adulthood), between 31 and 40 (young adulthood), and after 41. I use the arrival age 22-30 as reference because emerging adulthood is a relatively less stressful developmental period, where individuals

experience more freedom than adolescents but assume fewer responsibilities as adults (Pettit, Roberts, Lewinsohn, Seeley, & Yaroslavsky, 2011).

In terms of smoking behavior, CCHS-MH asks respondents to identify themselves as non-smoker, former smoker, or regular smoker. With respect to drinking behavior, respondents identify themselves as non-drinker, former drinker, social drinker, and regular drinker.

c. Control variables

The inclusion of control variables is to prevent finding a spurious focal association. Table 3.1 describes how the variables were coded and the reference categories. The control variables of this study include categorical and continuous variables. Categorical variables include gender, age, household types, education, income adequacy level, work status, country of origin, and place of residence. Country of origin refers to major source countries before and after 1967 (the year when Canada's point system was implemented), such as the United Kingdom, the United States, Germany, Netherland, Italy, China, Philippines, South Asia, and India. Other countries of origin are coded as South, Central America, and Caribbean, other Europe, other Asia, Africa, and others. In all the analysis, United Kingdom is used as a reference category for comparison, as Porter (2015) argues that British immigrants belong to one of the charter groups and are at the top of the vertical mosaic in Canada.

Income adequacy levels were divided by number of household members to create an income adequacy variable. The upper 25% income adequacy was coded as highest, the lowest 25% income adequacy as lowest, and in between these two categories were upper-middle and lower-middle. Before applying the weight, each income adequacy level constituted 25%, but after the sample weight was applied, there is a higher concentration (30.30%) of immigrant

families in lower income, whereas those in the highest income have a lower concentration (19.49%).

Place of residence reflects the receiving context of major Canadian cities. With respect to controlling for city of residence, some literature suggests that large immigrant cities make ethnic communities more accessible to immigrants, while second- or third- tier immigrant cities have less ethnic resources to offer (Brettell, 2003), which might have differential effects on immigrants' mental health (Chadwick & Collins, 2015). Canada's first-tier immigrant cities include Montreal, Toronto, and Vancouver. These three cities are traditional sites for immigrant settlement. In 2001, approximately 73% of immigrants to Canada chose to live in these three cities. Another 13% chose to live in the second-tier immigrant cities, including Calgary, Edmonton, Winnipeg, Hamilton, and Ottawa-Gatineau. Another 3% settled in the third-tier immigrant cities, including Victoria, Saskatoon, Regina, Quebec City, and Halifax (Frideres, 2006). The last 12% of immigrants live outside of first-, second-, and third-tier cities. The first-tier cities are coded as the reference group. The second-tier cities are coded as 1. Because there are very few immigrant samples in CCHS-MH 2012, I merged third-tier cities and cities in the rest of Canada together as one category and coded as 2.

Linguistic minority in this study is defined as immigrants who do not speak English or French at home. Linguistic minority individuals may speak an official language but ultimately still belong to a linguistic minority if the official languages are not their first language, or if they speak with an accent. The concept of linguistic minority is rarely incorporated into migrant health studies, and tends to be conflated with non-English language use or language barrier. However, the concept of language use does not convey the idea of discrimination based on accent, an indicator of being a perpetual foreigner, a type of discrimination immigrant youth

often experience at school (Kayaalp, 2016). In this study, speaking English or French at home is used as a reference group. Immigrants who speak one official language (English or French), and a foreign language at home is coded as 1, whereas immigrants who only speak a foreign language at home is coded as 2.

Table 3.1 Variable descriptions for the CCHS-MH (2012) and GSS-IS (2013)

Variables	Variable descriptions		
IV	**CCHS-MH (2012)**	**GSS-IS (2013)**	
Nativity status	coded 0=Canadian-born (reference group) 1=Foreign-born (0-9 yrs of migration) 2=Foreign-born (10-19 yrs of migration) 3=Foreign-born (20-29 yrs of migration) 4=Foreign-born (30-39 yrs of migration) 5=Foreign-born (40-49 yrs of migration) 6=Foreign-born (>50 yrs of migration)	coded 0=Canadian-born (reference group) 1=Foreign-born (0-9 yrs of migration) 2=Foreign-born (10-19 yrs of migration) 3=Foreign-born (20-29 yrs of migration) 4=Foreign-born (30-39 yrs of migration) 5=Foreign-born (40-49 yrs of migration) 6=Foreign-born (>50 yrs of migration)	
Years of migration	coded 0 = <10 years 1=10-19 years 2 =20-29 years 3 =30-39 years 4= 40-49 years 5= >50 years	coded 0 = <10 years 1=10-19 years 2 =20-29 years 3 =30-39 years 4= 40-49 years 5= >50 years	
Age at migration	coded 0 = 22-30 years old 1 = 0-8 years old 2 = 9-13 years old 3 = 14-21 years old 4 = 31-40 years old 5= >41 years old	x	
Immigrant categories	x	coded 0=economic class with dual citizenship 1=economic class with Canadian citizenship 2=economic class with PR 3=family class with dual citizenship 4= family class with Canadian citizenship 5= family class with PR 6=refugee with dual citizenship 7= refugee with Canadian citizenship 8= refugee with PR 9 = other landed programs 10=undetermined 11=other routes to Canada	
Gender	coded 0=male 1=female	coded 0=male 1=female	
Race	coded 0=white 1=minority	coded 0=white 1=minority	
Age	coded 0 =18-24 years old 1=15-17 years old 2=25-34 years old 3=35-44 years old 4=45-54 years old 5=54-64 years old 6=>65 years old	coded 0 =18-24 years old 1=0-17 years old 2=25-34 years old 3=35-44 years old 4=45-54 years old 5=54-64 years old 6=>65 years old	
Household type	coded 0 = married/common-law couple 1= couple with children > or >=25 2 =unattached 3 =extended family 4 =female lone family 5 =other types	coded 0 = married/common-law couple 1= couple with children > or >=25 2 =unattached 3 =extended family 4 =female lone family 5 =other types	
Income adequacy	coded 0 = lowest income (upper 25%) 1= lower-upper 2= upper 3=highest (lower 25%)	coded 0=<$30,000 1=$30,000-59,999 2=$60,000-99,999 3=>$100,000	
Education	coded 0 =< secondary 1=secondary grad. 2=some post-secondary 3=trade certificate 4=college/university certificate 5=bachelor's degree 6=above Bachelor's degree	coded 0 =< secondary 1=secondary grad. 2=some post-secondary 3=trade certificate 4=college/university certificate 5=bachelor's degree 6=above Bachelor's degree	

Work status-1	coded 0 =currently working 1=not working 2=unable to work 3=retired	coded 0=currently working 1=job seeking 2=school 3= domestic responsibility 4=unable to work 5=else	
Work status-2	coded 0 =full-time 1=part-time 2=school/domestic labor/retirement	coded 0 =full-time 1=part-time 2=school/domestic labor/retirement	
Linguistic minority	coded 0=English or French 1=English, French, and other 2=other only	coded 0=English or French 1=English, French, and other 2=other only	
Place of residence	coded 0=first-tier city 1=second-tier city 2=third-tier city and others	coded 0=first-tier city 1=second-tier city 2=third-tier city 3=others	
Country of origin	coded 0=United Kingdom 1=United States 2=South & Central American/Caribbean 3=Other Europe 4=Germany 5=Netherlands 6=Italy 7=Africa 8=Other Asia 9=China, Hong Kong, Taiwan 10=Philippines 11=India 12=Oceana	coded 0=United Kingdom 1=United States 2=South & Central American/Caribbean 3=Other Europe 4=France 5=Germany 6=Netherlands 7=Poland 8=Romania 9=Russian Federation 10=Italy 11=Iran 12=Lebanon 13=China, Hong Kong, Taiwan 14=Philippines 15=Viet Nam 16=Sri Lanka 17=India 18=Pakistan 19=Other Asia 20=Africa 21=Oceana	
Type of drinker	coded 0=non-drinker 1=former drinker 2=occasional drinker 3=regular drinker	x	
Type of smoker	coded 0=non-smoker 1=former occasional smoker 2=former daily smoker 3=always occasional smoker 4=occasional smoker (former daily smoker) 5=daily smoker	x	
BMI	coded 0= normal 1=underweight 2=overweight 3=obese	x	
Exercise time (each episode)	coded 0=no exercise 1=0-15 minutes 2=15-30 minutes 3=30-60 minutes 4=60-120 minutes 5=>2 hrs	x	
IVs /Mediators	**CCHS-MH (2012)**		
Interpersonal strain	continuous variable (0-12)	x	

Social support	continuous variable (10-40)	x	
DVs	**CCHS-MH (2012)**	**GSS-IS (2013)**	
Psychological distress	continuous variable (0-40)	x	
Positive mental health	continuous variable (0-70)	x	
Self-rated mental health	coded 0=poor-fair 1=good 2=very good 3=excellent	coded 0=poor-fair 1=good 2=very good 3=excellent	
Subjective well-being	x	continuous variable (0-10)	

Table 3.2 Description of scale items, scale range, and internal consistency (psychological distress, positive mental health, social support, and interpersonal strain)

Scale	Items	Scale Range	Chronbach α
Psychological distress (K10)	1. In the past four weeks, how often did you feel worn out for no real reason? 2. In the past 4 weeks, how often did you feel nervous? 3. In the past 4 weeks, how often did you feel so nervous that nothing could calm you down? 4. In the past 4 weeks, how often did you feel hopeless? 5. In the past 4 weeks, how often did you feel restless or fidgety? 6. In the past 4 weeks, how often did you feel so restless you could not sit still? 7. In the past 4 weeks, how often did you feel depressed? 8. In the past 4 weeks, how often did you feel that everything was an effort? 9. In the past 4 weeks, how often did you feel so sad that nothing could cheer you up? 10. In the past 4 weeks, how often did you feel worthless? (1)None of the time (2)A little of the time (3)Some of the time (4)Most of the time (5)All of the time	0-40	0.85
Positive mental health	1. In the past month, how often did you feel: ...happy? 2. ....interested in life? 3.....satisfied with your life? 4.....that you had something important to contribute to the society? 5.....that you belonged to a community? 6..... that our society is becoming a better place for people like you? 7..... that people are basically good? 8..... that the way our society works makes sense to you? 9..... that you liked most parts of your personality? 10..... good at managing the responsibilities of your daily life? 11..... that you had warm and trusting relationships with others? 12..... .that you had experiences that challenge you to grow and become a better person? 13..... ...confident to think or express your own ideas and opinions? 14..... that your life has a sense	0-70	0.86

	of direction or meaning to it? (1)Everyday (2)Almost every day (3)About 2 or 3 times a week (4)About once a week (5)Once or twice (6)Never		
Social support	1. There are people I can depend on to help me if I really need it. 2. There are people who enjoy the same social activities I do. 3. I have close relationships that provide me with a sense of emotional security and well-being. 4. There is someone I could talk to about important decisions in my life. 5. I have relationships where my competence and skill are recognized. 6. There is a trustworthy person I could turn to for advice if I were having problems. 7. I feel part of a group of people who share my attitudes and beliefs. 8. I feel a strong emotional bond with at least one other person. 9. There are people who admire my talents and abilities. 10. There are people I can count on in an emergency. (1) Strongly agree (2) Agree (3) Disagree (4) Strongly disagree	10-40	0.93
Interpersonal strain	1. During the past month, how often have you felt that others made too many demands on you? 2. During the past month, how often have you felt that others were critical of you and things you did? 3. During the past month, how often have you felt that others did things that were thoughtless or inconsiderate? 4. During the past month, how often have you felt that others acted angry or upset with you? (1)Never (2)Once in a while (3) Fairly often (4) Very often	0-12	0.81

3.2 General Social Survey, Social Identity 2013 (GSS-SI)

3.2.1 Sources of data

The 9,487 immigrant sample of this study was extracted from the General Social Survey, Social Identity 2013 (GSS-SI). The sample size of the entire Canadian sample is 27,695, with a

response rate of 48.1%. The cross-sectional and stratified cluster design covers respondents of 15 years old and over in all Canadian provinces, excluding individuals without telephones. Missing values of the immigrant samples were imputed by multiple imputation methods.

3.2.2 Variables

a. Response variables

The response variables include subjective well-being and self-rated mental health. Subjective well-being measures respondents' life satisfaction based on a ten-point scale. Respondents were asked to answer the question, "How do you feel your life as a whole right now?" A score of 1 means "very dissatisfied," while a score of 10 means "very satisfied." According to Statistics Canada, the measure of subjective well-being has been included in its surveys for the past 25 years (Bonikowska, Helliwell, Hou, & Schellenberg, 2013). As the distribution of subjective well-being is skewed to the left, I performed square-root transformation to make the distribution closer to normal distribution.

Self-rated mental health is a 5-point Likert scale asking respondents to report if they feel their mental health is "poor, fair, good, very good, or excellent." However, since very few Canadian immigrants in GSS-SI report that they have poor mental health, poor and fair mental health were merged together as a single category.

b. Explanatory variables

Explanatory variables include nativity status, years of migration and immigrant categories. Years of migration is divided into six categories, with the most recent immigrant group (0-9 years) as reference category. The other immigrant groups were coded as 10-19 years, 20-29

years, 30-39 years, 40-49 years, and 50 years or more. Immigrant categories include economic class with dual citizenship (reference group), economic class with single Canadian citizenship, economic class with permanent residence status, family class with dual citizenship, family class with single Canadian citizenship, family class with permanent resident status, refugee with dual citizenship, refugee with single Canadian citizenship, refugee with permanent resident status, other landed programs, immigrants with indeterminate citizenship status, and immigrants without any landed programs. Previous studies argue that economic immigrants and refugees do not share the same health risks (Toole & Waldman, 1997). Compared to economic immigrants, refugees experience higher exposure to economic and geographic displacement prior to resettlement and have stronger motivations for completing naturalization (Beiser, Dion, Gotoweic, & Hyman, 1995; Hyman, Vu, & Beiser, 2000; Yu, Quellet, & Warmington, 2007). As refugees are more willing and more likely to acquire Canadian citizenship than economic immigrants, I decided to merge landed programs and citizenship status together into one variable, so as to avoid multicollinearity.

c. Control variables

The following control variables derived from GSS-SI 2013 are comparable to the ones from CCHS-MH 2012: age, gender, household type, education, current working status, linguistic minority status, and city of residence. However, household income levels from GSS-SI 2013 were coded differently than they were from CCHS-MH 2012, since household income as a continuous number in GSS-SI 2013 had more than 30% of its values missing. It would be more reasonable to use household income ranges as it had much less missing values. Income levels were divided into four categories: the lowest 25% of household income levels were merged into

one category (less than $30,000), the second lowest 25% were merged and coded as $30,000-59,999, the second highest 25% coded as $60,000-$99,999, and the highest 25% were coded as income more than $100,000. The lowest income category was used as a reference category.

Another variable coded slightly differently from CCHS-MH 2012 is immigrants' current working status and household types. Compared to CCHS-MH 2012, GSS-SI 2013 has a more refined categories of current working status. Current working status includes currently working (reference), job seeking, school, domestic responsibility, retired, permanently unable to work, and others. Other work-related variables included full-time work (reference), part-time work, and school, domestic work, and retirement. Household types in GSS-SI 2013 were also grouped differently. The reference category of household types is couple-only household. The rest of the categories are: Couple with a single (adult) child under or over 25 years old, unattached individuals, One parent with a single (adult) child under or over 25 years old, respondent living with two parents, respondent living with one parent, and other types of household.

GSS-SI 2013 includes more questions measuring respondents' race and ethnicity. Based on the cross-tabulation, I was able to create a variable that includes four types of race and ethnicity: white and single ethnicity, minority and single ethnicity, white and multiple ethnicity, and minority and multiple ethnicity.

3.3 Missing values

Missing values of the immigrant samples were imputed by multiple imputation methods, specifically multivariate imputation by chained equations in Stata 13.0. According to Little and Rubin (2002), the imputed value is not to reflect the true values of the missing data. Rather, it incorporates a random component to reflect the uncertainty around the true value. More

specifically, the uncertainty is captured by the differences between the imputed data sets. The strength of this imputation method is that it yields to more valid statistical inference than complete case analysis or mean imputation (Little & Rubin, 2002). In the case of missing data in CCHS-MS, each missing value is imputed 10 times to create complete datasets. Allison (2001) argues that 5 data sets are sufficient to get efficient parameter estimates when the issue of missing data is moderate. In the case of CCHS-MS, most variables have only around 5% of missing values, but since the positive mental health variable has more than 5% of missing values, increasing the imputation to 10 times helps increase the prediction efficiency.

Using Bayesian estimation technique, there are three major processes involved in multiple imputations: the first step is to impute the missing values; the second step is to analyze the individual completed dataset; the third step is to combine multiple parameters (Schaefer, 1997). Ideally, the imputation models are less restrictive than the analysis models, since the former can include auxiliary variables of substantive interest to the research question or those correlated with the variables of interest (Allison, 2001). As a result, some auxiliary variables without missing values, as well as variables in the analysis models were both included in the imputation models to preserve the relationship between the independent variables and dependent variables (Allison, 2001)

3.4 Analytical strategy

The sample characteristics of the Canadian immigrant populations from CCHS-MH will be presented in Chapter 4. Following the sample descriptions, the first section of Chapter 5 discusses the healthy immigrant effect for mental health in the Canadian immigrant population, including between-group comparisons (nativity effect) and within-group comparisons (duration

effect), using both CCHS-MH 2012 and GSS-SI 2013. The statistical methods used for testing the healthy immigrant effect include ordered logistic regression and ordinary least squares regression.

The second section of Chapter 5 will present a series of regression models testing the hypotheses guided by the social determinants of health perspective proposed in Chapter 2 and using only CCHS-MH 2012. The statistical methods used for identifying the social determinants for immigrants' mental health are ordered logistic regression and ordinary least squares regression.

The first section of Chapter 6 presents the pathway models and hierarchical regression models guided by the Stress Process Model. The focal association of the hierarchical models are years of migration and psychological distress (as well as positive mental health and self-rated mental health). The response variables for the pathway models are social support and interpersonal strain. The response variables for the hierarchical models are psychological distress, positive mental health, and self-rated mental health. The goal of using the hierarchical model is to examine the changes in coefficients of the focal association when proposed mediators or suppressors (social support and interpersonal strain) enter into the model. To test the moderating effect of social support, an interaction term of interpersonal strain and social support will be added to the model.

The second section of Chapter 6 will show the effects of age at migration on psychological distress. The focal association in this chapter is age at migration and psychological distress. Mediators are interpersonal strain and health behavior. The suppressor is social support. Path models will be performed first to examine if younger age at migration is associated with greater

substance use, smoking behavior, drinking behavior, social support, and interpersonal strain. In the hierarchical nested models, mediators or suppressors will be entered in models in steps to investigate the change in coefficients of the focal association between age at migration and psychological distress.

Chapter 4 Sample Descriptions: CCHS-MH 2012 and GSS-SI 2013

Sample descriptions derived from CCHS-MH 2012 and GSS-SI 2013 will be presented in the following section. Sample descriptions include demographic characteristics, socio-economic backgrounds, and mental health profiles of all immigrant samples. However, only the nativity status and mental health profiles of the Canadian samples will be presented in this chapter, as the major analysis of this dissertation concerns the immigrant population. Demographic and socio-economic backgrounds of the Canadian samples can be found in the appendix.

4.1 The nativity status and mental health profiles of the Canadian samples (CCHS-MH 2012)

Table 4.1 describes the proportion of foreign-born and native-born populations. The Canadian samples from CCHS-MH 2012 show that 74.85% of the Canadian population is native-born, and 25.15% is made up by the foreign-born. Among the 25.15% immigrant sample, 6.61% have a migration history of less than ten years, 5.89% have a migration history of 10 to 19 years, 4.38% have 20 to 29 years, 2.88% have 40 to 49 years, and 2.62% have more than 50 years. The weighted sample of CCHS-MH 2012 has a higher immigrant concentration than the National Household Survey 2011. According to the National Household Survey 2011 (part of the Statistics Canada's Census Program), 20.6% of the Canadian population were immigrants, indicating that CCHS-MH 2012 oversampled immigrants.

On average, the Canadian samples of CCHS-MH 2012 scored 5.27 on the K10 scale (range 0-40), with a median of 4. The difference in medium and mean scores shows that the distress distribution is skewed to the right. Although psychological distress reflects the mental health of a

specific population, little research looks at the general adult populations[13]. Currently, few national surveys use K10 or K6 to evaluate adults without severe anxiety or mood disorders, making it hard to know where Canadians stand in terms of their psychological distress scores. However, we do know that the average score of psychological distress measured by K10 varies by countries. For example, the majority group in Sri Lanka, the Sinhalese, had a mean score of 6.86 on K10 (Wijeratne et al., 2011). Another study, based on 2007 Australian National Household Survey of mental health and well-being, shows that Australians score an average of 4.5 on K10 (Slade, Grove, & Burgess, 2011).

The following example shows how Canadians fare relative to Americans: Measured by K6 (range 0-24), the 2011 National Health Interview Survey conducted by the U.S. Census Bureau indicates that, American males had an average of 2.24 psychological score, whereas American females had an average of 2.70 (Keyes, Dhingra, & Simoes, 2014). A Canadian study using multiple waves of the National Population Household Surveys shows that, for the birth cohort of 1970-1979, the Canadian males had a mean score of 3.16 on K6, while Canadian females had a mean score of 3.79 (Drapeau, Marchand, & Forest, 2014). Earlier male birth cohorts had a mean distress level in between 2.05 and 2.77, while earlier female birth cohorts had a mean distress level in between 3.22 and 2.71 (Drapeau et al., 2014).

In terms of positive mental health, the Canadian samples scored an average of 54.24 out of 70 on the positive mental health scale. The distribution is also slightly skewed to the right, with a median of 56. Though Statistics Canada incorporates the concept of positive mental health in

[13] For example, most studies focus on the psychological distress patterns of specific minority groups (Noh& Avison, 1996; Yip et al., 2008). But we do not know if minority groups and the general Canadian population share similar distress patterns.

several waves of CCHS, very few surveys in other countries include it in their surveys. Also, positive mental health as a continuous score is more often used as a categorical diagnosis of the complete mental health—flourishing, moderately flourishing, and languishing—to detect the percentage of a population not experiencing mental illness but lacking psychosocial functioning (Keyes, 2002). Keyes's (2002) American study used the same positive mental health scale indicating that 18% of the adults aged between 25 and 74 are mentally healthy (flourishing), 65.1% are moderately healthy mentally (either flourishing or languishing), and 16.9% are mentally unhealthy (languishing) (Keyes, 2002). Based on CCHS-MH2012, 76.54% of all Canadian samples are mentally healthy, 20.98% have moderate mental health, and 1.48% are mentally unhealthy[14].

Table 4.1 shows that 25.02% of the Canadian samples rated their mental health as excellent, 40.18% as very good, 27.01% as good, and 7.79% as poor to fair. According to the 2002 Canadian Community Health Survey, 27.8% of the respondents rated their mental health as excellent, 39.2% as very good, 26.1% as good, and 6.9% as poor to fair (Statistics Canada, 2004). Generally speaking, Canadians' mental health profile has not changed much in the past two decades.

[14] Restricted Canadian samples to the age range of 25 to 74. The percentage does not change much. Based on CCHS-MH2012, 77.09% are mentally healthy, 21.48% have moderate mental health, and 1.49% are mentally unhealthy.

Table 4.1 Sample descriptions (CCHS-MH 2012), all Canadian samples

Explanatory Variable	
Nativity Status	Proportion (weighted), total=100%
Canadian-born (reference group)	74.85%
Foreign-born with a migration history of 0-9 yrs	6.61%
Foreign-born with a migration history of 10-19 yrs	5.89%
Foreign-born with a migration history of 20-29 yrs	4.38%
Foreign-born with a migration history of 30-39 yrs	2.38%
Foreign-born with a migration history of 40-49 yrs	2.88%
Foreign-born with a migration history >50 yrs	2.62%
Response Variable	
Self-rated mental health	Proportion (weighted), total=100%
Poor to fair (reference group)	7.79%
Good	27.01%
Very good	40.18%
Excellent	25.02%
Psychological distress	0-40
Mean	5.27
Medium	4.00
Standard deviation	.06
Positive mental health	0-70
Mean	54.24
Medium	56.00
Standard deviation	.01

4.2 The immigrant samples (CCHS-MH 2012)

Table 4.2 presents the immigrant samples extracted from CCHS-MH2012. Among all immigrant groups, recent immigrants living in Canada for less than ten years are the largest group, making up 26.29% of the entire immigrant sample. The second largest group, accounting for 23.41%, is long-term immigrants living in Canada for 10 to 19 years. Another 17.44% is constituted by those living in Canada for 20 to 29 years. The rest of 11.07%, 11.39%, and 10.40% are made up by immigrants living in Canada for 30 to 39 years, 40 to 49 years, and over 50 years, respectively. Most immigrants migrate to Canada as young adults. For example, 18.84% migrated to Canada in between the ages of 14 and 21 years old, 31.06% between the

ages of 22 and 30, and 18.64% between the ages of 31 and 40. Almost one out of five Canadian immigrants migrated in childhood or adolescence. For example, 13.33% of the sample migrated prior to the age of 8, and 8.21% migrated between 9 and 13 years old. The rest of the 10.02% migrated after 41 years old.

Prior to 1970, immigrants to Canada came primarily from European countries. British immigrants have a most visible presence historically in Canada. In the 1871 Census, British immigrants accounted for 83.6% of the foreign-born population in Canada (Statistics Canada, 2016). In the late 1980s and early 1990s, immigrants from other European countries increased in Canada. The number of British immigrants reduced to 28.3% of the foreign-born population in the 1971 Census (Statistics Canada, 2016). In the most recent decade, British immigrants make up 7.70% of the entire immigrant sample in CCHS-MH2012, which is still the largest European immigrant group, compared to 2.27% German immigrants, 3.60% Italian immigrants, and 1.59% Dutch immigrants. Other European immigrants account for 16.52% of the sample. After 1970, Canada's immigrant source countries shifted to non-European countries, especially those in Asia and the Middle East (Statistics Canada, 2016). Immigrants from China, Hong Kong, and Taiwan constitute 12.85% of the immigrant sample. Immigrants from Philippines and India constitute 8% and 7.18%, respectively. Immigrants from other areas of Asia constitute 16.62%. Immigrants from South or Central America and the Caribbean make up 13.30% of the sample. American immigrants comprise 2.70% of the sample. Immigrants from Africa constitute 6.70%.

After the implementation of the point system in 1967, the number of minority immigrants grew. Table 4.2 shows that among all immigrants, 37.64% are white and 62.36% are minority. Males constitute 49.08% of the sample, and females constitute 50.92%. Among all age groups,

middle-aged immigrants are the majority. For example, immigrants aged between 35 and 44, the largest age group, account for 21.35% of the sample. Immigrants aged between 45 and 54 account for 18.82%. There are fewer immigrant children and teenagers. Pre-adults account for only 2.00% of the entire immigrant samples. Young adults constitute nearly one fourth of the sample, with those aged between 18 and 24 years accounting for 7.90%, and those aged between 25 and 34 years accounting for 16.03%. Immigrants in their late middle age, ranging from 54 to 64 years old, make up 14.92% of the immigrant sample. Older immigrants, the second largest age group, comprise 18.97% of the immigrant sample.

Table 4.2 shows that 34.25% of immigrants speak either English or French at home, indicating that at least over one third of immigrants to Canada do not belong to a linguistic minority group. Another 34.00% speak either one of the official languages and one foreign language at home. The rest of the 31.75% speak only a foreign language at home. This latter group of immigrants thus belongs to a linguistic minority, which are most vulnerable to language barriers and language discrimination.

Around one fourth of immigrants currently live with their partners. Table 4.2 shows that 23.67% of immigrants share a household with their partners. Another 37.74% of immigrants live with their partner and minor or adult children. However, 16.01% of the immigrants are either single or unattached. Table 4.2 shows that 11.35% of Canadian immigrants live in extended households, in contrast to 5.73% of other Canadian households (see Appendix A for further details). This is not unexpected, since immigrants are more likely to co-reside with older parents or relatives than native-born due to recency of migration or economic constraints in Canada. For example, using the 2001 Canadian Census, Haan (2011) indicates that 31.6% of immigrants

living in Canada for less than five years are situated in overcrowded households, as opposed to 3% of the Canadian-born. Visible minority immigrant groups also experience more residential crowding. For example, 28.1% of Filipinos, 26.1% of South Asians, and 17.5% of Blacks experience issues of crowding, in contrast to 3.5% of the Canadian-born.

Immigrants to Canada are relatively well-educated, reflecting the immigration policies emphasizing the educational and occupational-skill requirements introduced in 1993 (Simmons & Plaza, 2006). According to Table 4.2, 25% of the immigrant samples have a college or university certificate. Approximately one third of them have a post-secondary degree: 20.34% have a Bachelor's degree and 12.14% have a graduate degree. A small number of immigrants have a trade certificate or some post-secondary degree, at a rate of 4.85% and 4.83% respectively. Still, there are 15.96% of the immigrant samples having no high school degree, and 13.47% have only a high school degree.

Immigrants' household income concentrates in the lowest income level. Before applying the sample weight, immigrants' household income levels are divided equally into quartiles. After the sample weight was applied, 30.30% of the immigrant sample belongs to the lowest household income level, while only 19.49% of them reach the highest household income level[15]. Still, around half of the immigrant sample clusters in middle range household income: 26.06% fall into the lower-middle range and 24.15% in the upper-middle range.

Currently, 58.36% of the immigrant samples have jobs, but 32.59% are not working for reasons other than retirement or permanent job injuries. 7.2% of immigrants are retired or above

[15] Income adequacy is created by total household income divided by number of persons in the household. The lowest household income level is <12,700 per person. The lower-middle household income is 12700-22199 per person. Upper-middle household income: 22000-37499. Highest household income: >38000

the working age (Statistics Canada excluded respondents above 75 to answer this question). There is also 1.84% of immigrants permanently unable to work. Among immigrants currently working, 52.59% have full-time jobs, and 32.59% have part-time jobs. The remaining 38.59% are either in school, retired, or unemployed due to domestic responsibilities.

Table 4.2 shows that 61.56% of the immigrants chose first-tier immigrant receiving cities to live, including Montreal, Toronto, and Vancouver. The percentage of immigrants living in second-tier immigrant cities, such as Edmonton, Hamilton, Winnipeg, is 17%. The remaining 21.03% of immigrants are scattered around third-tier immigrant receiving cities or other less popular immigrant receiving cities.

Previous studies have shown that immigrants' health behaviors or health motivations change for the worse after migration (Antecol & Bedard, 2006; Remennick, 1999). However, Table 4.2 shows that 55.19% of the immigrants have never smoked. 16.40% formerly smoked daily and 13.73% have smoked occasionally, but they stopped smoking. Still, 8.81% of the immigrant sample smoke daily. Drinking behaviors are more divided among immigrants: 34.65% of the immigrant sample never drank, but 45.39% are regular drinkers. In between them are the 19.96% classified as occasional drinkers. Drug use is the most divided health behavior: 77.08% did not use any non-medical drugs last year, and 22.92% tried some form of non-medical drugs, including marijuana and LSD.

Compared to more prohibitive use of drugs and tobacco, Canadian immigrants are rather sedentary. According to Table 4.2, 33.35% of the immigrant sample do not exercise. Among immigrants who exercised in the past week, 4.43% exercised less than 15 minutes for each exercise episode, 15.01% exercised 16 to 30 minutes, 21.91% exercised 31 to 60 minutes,

31.30% exercised 61-120 minutes, and 12.09% exercised more than 2 hours each time. Previous studies using the 1994-1995 National Population Health Survey find that 67% of the non-European immigrants were physically inactive for their leisure time, in contrast to 57.7% of the native Canadians and 52.2% of the European immigrants (Chen, Ng, & Wilkins, 1996). Furthermore, non-European immigrants' physical inactivity did not change much with time in Canada (Chen et al., 1996). An American study also shows that physical inactivity is not associated with length of migration, but it finds that young age at migration and higher English ability promotes physical activity (Evenson, Sarimeiento, & Ayala, 2004).

According to Public Health Agency of Canada (2011), 24.3 to 25.4% Canadian adults are obese. Immigrants have lower obesity rates. Table 4.2 indicates that 11.85% of the immigrant sample are obese. However, 33.18% are overweight. According to the OECD (2016), the percentage of overweight Canadians in 2014 was 33%. The percentage of overweight populations varied by country in 2014. For example, in South Korea the percentage of overweight persons is 22.4%, in the U.S. the percentage is 34.7%, in Italy the percentage is 36.2%%, and in Greece the percentage is 39.4%. Though Canadian immigrants have much lower obesity rates than native-born Canadians, the percentage of overweight Canadian immigrants is close to overweight native-born Canadians (33.18% versus 33%). According Statistics Canada (2013), 2% of Canadian adults are underweight. The immigrant sample in Table 4.2 indicates that 3.21% are underweight, which is higher than the general Canadian population. The amount of immigrants having a normal BMI is 51.76%. This rate is higher for immigrants than for the general Canadian population. Based on the report of Statistics Canada (2013), 3 out of 10 Canadian men have normal BMI, while for Canadian women it is 4 out of 10.

As shown in Table 4.2, 30.93% of immigrants rated their mental health as excellent, 37.72% as very good, 25.15% as good, and 6.21% as poor to fair. Immigrants' mean distress score is 4.44 out of 40 on the K10. The distribution is also right-skewed, with a median of 3. Both of the mean and median distress score for immigrants is lower than the overall Canadian samples (mean: 5.27; median 4). For positive mental health, the mean score for immigrants is 55.17, which is higher than the mean score the Canadian sample overall (54.24). However, the median of positive mental health score, 56, is the same for immigrants and overall Canadian samples.

In terms of social support, immigrants scored 35.11. The scale range is 10 to 40 and the median is 36, indicating a left-skewed distribution. The interpersonal strain score is also left skewed, with a mean of 2.34 out of 12, and a median of 2.

Table 4.2 Sample descriptions (CCHS-MH 2012), immigrant samples

Explanatory Variable	
Years of migration	Proportion (weighted), total=100%
0-9 years (reference group)	26.29%
10-19 years	23.41%
20-29 years	17.44%
30-39 years	11.07%
40-49 years	11.39%
50 years or more	10.40%
Age at migration	Proportion (weighted), total=100%
0-8 years old	13.22%
9-13 years old	8.21%
14-21 years old (reference group)	18.84%
22-30 years old	31.06%
31-40 years old	18.64%
>41 years old	10.02%
Control Variable	
Country of origin	Proportion (weighted), total=100%

U.K. (reference group)	7.70%
U.S.	2.70%
South America/Central America/Caribbean	13.30%
Germany	2.27%
Italy	3.60%
Netherlands	1.59%
Other Europe	16.52%
Africa	6.70%
China, Hong Kong, Taiwan	12.82%
Philippines	8.00%
India	7.18%
Other Asia	16.62%
Oceania	1.00%
Race	Proportion (weighted), total=100%
White (reference group)	37.64%
Minority	62.36%
Gender	Proportion (weighted), total=100%
Male (reference group)	49.08%
Female	50.92%
Age	Proportion (weighted), total=100%
15-17	2.00%
18-24 (reference)	7.90%
25-34	16.03%
35-44	21.35%
45-54	18.82%
54-64	14.92%
>65 years old	18.97%
Linguistic minority	Proportion (weighted), total=100%
English or French (reference group)	34.25%
English, French, and other	34.00%
Other only	31.75%
Household type	Proportion (weighted), total=100%
Couple only (reference group)	23.67%
Couple living with minor or adult children	37.74%
Unattached	16.01%
Extended family	11.35%
Female lone family	9.04%
Other types	2.19%
Education	Proportion (weighted), total=100%
< secondary (reference group)	15.96%
Secondary grad.	13.47%
Some post-secondary	4.83%
Trade certificate	4.85%
College/university certificate	25.00%
Bachelor's degree	20.34%
Above Bachelor's degree	12.14%
Income Level	Proportion (weighted), total=100%
Lowest	30.30%
Lower-middle	26.06%
Upper-middle	24.15%
Highest	19.49%
Work status-1	Proportion (weighted), total=100%

Currently working (reference group)	58.36%
Currently not working	32.59%
Retired or above working age	7.20%
Permanently unable to work	1.84%
Work status-2	Proportion (weighted), total=100%
Full-time	52.59%
Part-time	8.82%
School/domestic labor/retirement	38.59%
Place of residence	Proportion (weighted), total=100%
First-tier city (reference group)	61.56%
Second-tier city	17.42%
Others	21.03%
Type of smoker	Proportion (weighted), total=100%
None smoker (reference group)	55.19%
Former occasional smoker	13.73%
Former daily smoker	16.40%
Always occasional smoker	2.86%
Occasional smoker now (formerly a daily smoker)	3.00%
Daily smoker	8.81%
Type of drinker	Proportion (weighted), total=100%
None drinker (reference group)	34.65%
Occasional drinker	19.96%
Regular drinker	45.39%
Drug use	Proportion (weighted), total=100%
No (reference group)	77.08%
Yes	22.92%
BMI	Proportion (weighted), total=100%
Normal	51.76%
Underweight	3.21%
Overweight	33.18%
Obese	11.85%
Exercise level	Proportion (weighted), total=100%
No exercise	33.25%
0-15 minutes	4.43%
16-30 minutes	15.01%
31-60 minutes	21.91%
61-120 minutes	13.30%
>2 hours	12.09%
Social support	10-40
Mean	35.11
Medium	36.00
Standard deviation	.11
Interpersonal strain	0-12
Mean	2.34
Medium	2.00
Standard deviation	.05
Self-rated mental health	Proportion (weighted), total=100%
Poor to fair	6.21%
Good	25.15%
Very good	37.72%
Excellent	30.93%
Psychological distress	
Mean	4.44

Median **Standard deviation**	3 .11
Positive mental health	Mean/Median/Standard deviation
Mean **Median** **Standard deviation**	55.17 56.00 .24

4.3 The nativity status and mental health profiles of the Canadian samples (GSS-SI2013)

Table 4.3 shows that 76.64% of the sample is Canadian-born. The other 23.36% are comprised of immigrants with different migration histories: 5.93% are recent immigrants living in Canada for less than 10 years, 5.42% for 10 to 19 years, 3.72% for 20 to 29 years, 2.56% for 30 to 39 years, 2.99% for 40 to 49 years, and 2.75% for over 50 years.

Among all of the Canadians sampled, 35.25% rated their mental health as excellent, 37.87% rated it as very good, 20.82% as good, and 6.06% rated is as poor to fair. On average, Canadians have a score of 7.88 out of the 10-point subjective well-being scale. The median of subjective well-being for the Canadian sample is 8. A comparison of the mean and median shows that the distribution is scaled to the left.

Table 4.3 Sample descriptions (GSS-SI 2013), all Canadian samples

Explanatory Variable	
Nativity Status	Proportion (weighted), total=100%
Canadian-born (reference group)	76.64%
Foreign-born with a migration history of 0-9 yrs	5.93%
Foreign-born with a migration history of 10-19 yrs	5.42%
Foreign-born with a migration history of 20-29 yrs	3.72%
Foreign-born with a migration history of 30-39 yrs	2.56%
Foreign-born with a migration history of 40-49 yrs	2.99%
Foreign-born with a migration history >50 yrs	2.75%
Response Variable	
Self-rated mental health	Proportion (weighted), total=100%
Poor to fair	6.06%
Good	20.82%
Very good	37.87%
Excellent	35.25%
Subjective well-being	
Mean	7.88
Median	8.00
Standard Deviation	.002

4.4 The immigrant samples (GSS-SI 2013)

Table 4.4 presents the characteristics of immigrant samples extracted from GSS-SI 2013. It shows that the major immigrant category—constituting 16.06% of those sampled—is economic class with dual citizenship. The second largest category is family class with dual citizenship constituting a percentage of 14.16%. A similar number of economic and family immigrants possess single Canadian citizenship, 11.29% and 11.75% respectively. More economic class immigrants have permanent resident status (10.44%) than family class immigrants with permanent resident status (7.53%). Refugees are the minority within the immigrant population, comprising less than 10% of the entire immigrant sample. Slightly more refugees have single Canadian citizenship than dual citizenship (3.30% versus 3.33%), and 1.57% have permanent resident status. 7.96% of the immigrant samples belong to landed programs other than the major

three categories mentioned above. There are also 11.20% of immigrants who stay in Canada on student or work visas. 1.41% of the immigrant sample have an indeterminate citizenship status.

Table 4.4 shows that slightly over one fourth of the sample (25.66%) are recent immigrants living in Canada for less than 10 years. The remaining three fourths are represented by long-term immigrants who have lived in Canada for 10 to 19 years (23.38%), 20 to 29 years (15.96%), 30 to 39 years (10.03%), 40 to 49 years (12.66%), and more than 50 years (11.41%). Characteristics of source countries reflect the ethnic and racial variations in Canada. In the past three decades, immigrants are more likely to come from Asia and Middle East, representing approximately 40% of the entire immigrant sample. Chinese immigrants make up close to one tenth of the entire immigrant population (9.98%). Filipino immigrants are a major ethnic group, comprising 7.37% of the sample. The third largest recent immigrant groups are Indian immigrants, representing 6.54% of the sample. Smaller immigrant sending countries include Pakistan (2.00%), Iran (1.78%), Lebanon (1.34%), Sri Lanka (1.10%), and Vietnam (0.86%). Immigrants from other Asian countries constitute 9.11%.

Prior to 1970, immigrants were likely to come from the United Kingdom, Germany, Poland, and Italy. The percentage of immigrants coming from these countries are decreasing, but they still have some visibility in numbers. The United Kingdom and France remain the major source of European immigrants after 1970 (Statistics Canada, 2016). Among all immigrants sampled, British immigrants account for 10.07% of the immigrant population, Italian immigrants represent 3.13%, Germany 2.59%, France 2.14%, Poland 2.10%, Netherlands 1.59%, and Romania 1.42%. Immigrants from other European countries represent 9.50%. The Russian Federation became a source country of European immigrants in the 1980s and 1990s, after the dissolution of the

Soviet Union (Statistics Canada, 2016). As shown in Table 4.4, immigrants from the Russian Federation alone represent 1.17% of the immigrant population. Immigrants from South America, Central America, and the Caribbean have an increasing presence in the recent Canadian immigrant population after 1970, growing from 10.3% before 2006 to 12.3% between 2006 and 2011 (Statistics Canada, 2016).

The racial and ethnic characteristics of immigrants reflect the diversity of immigrant source countries. Table 4.4 shows that 51.76% of Canadian immigrants are minorities belonging to one single ethnicity, while the percentage of whites belonging to one single ethnicity is lower (32.45%). Approximately 15% of Canadian immigrants belong to multiple ethnicities. Still, white immigrants are more likely to have multiple ethnic origins (11.13%) than minorities with multiple ethnic origins (4.66%).

Linguistic characteristics of immigrants presented in Table 4.4 reveal that less than one fifth of immigrants speak a language other than English or French at home. Most immigrants speak either English or French at home (86.51%), while less than one tenth of them speak a foreign language at home (8.81%). An even smaller percentage of immigrants (4.68%) speak either English or French, and a foreign language at home.

Males make up 49.58% of the immigrant sample, and the remaining 50.41% are females. Most immigrants to Canada are young adults. Immigrants aged between 18 and 44 account for just over two-thirds of the immigrant population. Immigrants aged between 35 and 44 are the largest age group, accounting for 20%. Younger immigrants aged between 25 and 34 represent 17.42%. Compared to other young adult groups, there is much lower percentage in the age of 18 and 24 (6.86%). Middle age groups account for over a third of the immigrant population, with

18.93% aged between 45 and 55, and 15.21% between 55 and 64. The smallest age group is pre-adults (2.12%), whereas the largest group is seniors over 65 years old (19.50%). Compared to the general Canadian population, immigrants have relatively lower childhood and teenage populations, but a higher senior population.

Immigrants are also more likely to make an annual household income of less than $29,999 compared to general Canadian households (16.97% versus 14.12%). Additionally, they are much less likely to make a household income of more than $100,000 than general Canadian households (28.41% versus 35.27%). Immigrants' household income levels are more likely to cluster in the middle range compared to general Canadian households. For example, 27.47% and 27.14% of the immigrant households have the household income ranges between 30,000 and 59,999, and between 60,000 and 99,999 (for Canadian households, the percentage is 24.26% and 26.35%, respectively). Household income differentials are smaller among immigrant families than among Canadian families.

In contrast to smaller income differences, immigrants' educational backgrounds vary widely, with a large portion having a university degree or higher (40.71%), and a second large portion having no high school degree (30.77%). This educational divide is largely due to the Canadian government's increased emphasis on educational credentials that began in 1970. Slightly less than one fourth of immigrants have a Bachelor's degree (24.81%), and 15.90% have a graduate degree. There is also a large percentage of immigrants who have a college or non-university certificate (18.40%). Many fewer have either a trade certificate or university certificate. Slightly over one fifth of immigrants finished high school and did not pursue further education (20.69%), whereas 10.08% did not finish high school.

Work characteristics shown in Table 4.4 indicate that 55.62% of immigrants are currently working full-time or part-time. A slightly higher number of immigrants are looking for jobs (2.83%) compared to the general Canadian population (2.22%). However, a lot more immigrants are not working because of domestic responsibilities (9.16%) than the general Canadian population (6.73%), which suggests that immigrants with small children cannot afford sending them to childcare facilities. There are also slightly fewer retired immigrants (17.82%) than the Canadian population (18.74%), though there are more seniors in the immigrant population. There are also fewer immigrants who are currently in school than those in the general Canadian population (11.05% versus 12.50%). This is expected, since there are fewer immigrants of school age. Immigrants are also less likely to be permanently unable to work (1.55%) than those in the general Canadian population (2.06%).

Geographical characteristics in Table 4.4 show that 60.47% of the immigrants live in first tier immigrant receiving cities such as Montreal, Toronto, and Vancouver. Also popular are the second tier receiving cities (16.06%) including Edmonton, Hamilton, Ottawa, and Winnipeg. Only 2.02% of Canadian immigrants live in third-tier immigrant cities such as Regina, Saskatoon, and Halifax. Still, slightly over one fifth of Canadian immigrants live in non-traditional immigrant receiving cities (21.45%).

Health profiles, including self-rated mental health and subjective well-being of immigrants, are presented in Table 4.4. With respect to self-rated mental health, the majority of immigrants rate their mental health as excellent (38,75%). A lower percentage of immigrants rate their mental health as very good (34.34%). Slightly over one fifth of immigrants rate their mental health as good (21.86%). Only 5.05% of immigrants rate their mental health as poor to fair. In

terms of subjective well-being (SWB), immigrants score an average of 7.95 out of 10 on the SWB scale. This score is slightly higher than the score of the general Canadian population (7.88), though the median is the same for both groups.

Table 4.4 Sample descriptions (GSS-SI 2013), all immigrant samples

Explanatory Variable	
Immigrant status	Proportion (weighted), total=100%
Economic class with dual citizenship (reference)	16.06%
Economic class with single Canadian citizenship	11.29%
Economic class with permanent resident status	10.44%
Family class with dual citizenship	14.16%
Family class with single Canadian citizenship	11.75%
Family class with permanent resident status	7.52%
Refugee with dual citizenship	3.30%
Refugee with single Canadian citizenship	3.33%
Refugee with permanent resident status	1.57%
Other landed programs	7.96%
Indeterminate	1.41%
Other statuses (student visa/work visa, etc.)	11.20%
Length of migration	Proportion (weighted), total=100%
<10 years	25.66%
10-19 years	23.38%
20-29 years	15.96%
30-39 years	10.93%
40-49 years	12.66%
> 50 years	11.41%
Response Variable	
Self-rated mental health	Proportion (weighted), total=100%
Poor to fair (reference group)	5.05%
Good	21.86%
Very good	34.34%
Excellent	38.75%
Subjective well-being	
Mean	7.95
Median	8.00
Standard Deviation	.003
Control Variable	
Country of origin	Proportion (weighted), total=100%
United Kingdom (reference group)	10.07%
U.S.	4.27%
South, Central America, and Caribbean	12.34%
Other Europe	9.50%
France	2.14%
Germany	2.59%
Netherlands	1.59%
Poland	2.10%
Romania	1.42%
Russian Federation	1.17%

Italy	3.13%
Iran	1.78%
Lebanon	1.34%
China, Hong Kong, and Taiwan	9.98%
Philippines	7.37%
Viet Nam	0.86%
Sri Lanka	1.10%
India	6.54%
Pakistan	2.99%
Other Asia	7.60%
Africa	9.11%
Oceania	0.99%
Race/Ethnicity	Proportion (weighted), total=100%
White & single ethnicity	32.45%
Minority & single ethnicity	51.76%
White & multiple ethnicity	11.13%
Minority & multiple ethnicity	4.66%
Linguistic minority	Proportion (weighted), total=100%
English or French	86.51%
English or French, and other	4.68%
Other only	8.81%
Gender	Proportion (weighted), total=100%
Male(reference)	50.42%
Female	49.58%
Age	Proportion (weighted), total=100%
15-17	2.12%
18-24(reference)	6.86%
25-34	17.42%
35-44	20.00%
45-54	18.93%
55-64	15.21%
>=65	19.50%
Household type	Proportion (weighted), total=100%
Couple only	24.40%
Couple with a single minor or adult child	38.71%
Unattached	11.01%
One parent with a single minor or adult child	4.95%
Respondent living with two parents	9.62%
Respondent living with one parent	1.98%
Other types	9.34%
Income levels	Proportion (weighted), total=100%
<29,999	16.97%
30,000-59,999	27.47%
60,000-99,999	27.14%
>100,000	28.41%
Education	Proportion (weighted), total=100%
Less than high school	10.08%
High school	20.69%
Trade certificate	5.74%
College/non-university certificate	18.40%
University certificate	4.39%
Bachelor's degree	24.81%
Graduate degree	15.90%
Main activity	Proportion (weighted), total=100%

Working	55.62%
Job seeking	2.83%
School	11.05%
Domestic responsibility	9.16%
Retired	17.82%
Unable to work	1.55%
Other activities	1.96%
Place of residence	Proportion (weighted), total=100%
1st tier immigrant cities	60.47%
2nd tier immigrant cities	16.06%
3rd tier immigrant cities	2.02%
Other cities	21.45%

Chapter 5 The Healthy Immigrant Effect for Mental Health and its Social Determinants

The first goal of this chapter is to investigate the pattern of the healthy immigrant effect with respect to mental health, including psychological distress, positive mental health, subjective well-being, and self-rated mental health. Given that previous studies have found inconsistent patterns across mental health measures (Harker, 2001), it is important to use multiple psychological outcomes when studying the mental health of immigrants. CCHS-MH 2012 and GSS-SI 2013 are both analyzed to produce the results that will be addressed in the following sections.

The second goal is to examine the social determinants of immigrants' mental health, including psychological distress, positive mental health, and self-rated mental health. Social determinants of health approaches have been applied to study immigrants' self-rated health in a few studies (Dunn & Dyke, 2000; McDonald & Kennedy, 2004; Newbold, 2005; Newbold & Danforth, 2003; Zsembik & Fennell, 2005). However, it has not been used to investigate immigrants' mental health. Recognizing that structural determinants have multiple layers, with socio-demographic determinants being the least modifiable and psychosocial determinants being the most modifiable, I analyzed the individual contributions of the socio-demographic, socio-economic, and psychosocial determinants on mental health measures in different models.

The third goal is to compare the relative importance of behavioral determinants and against several types of structural determinants mentioned above. This strategy helps to clarify some debates surrounding the role of immigrants' negative behavioral assimilation (e.g. heavier drinking and smoking) and social disintegration (e.g. linguistic barriers and economic disadvantages) on health deterioration.

5.1 Patterns of healthy immigrant effect for mental health in Canada

In the past decade, the healthy immigrant effect has mainly been studied by public health researchers and psychiatrists. This research showed that immigrants had lower rates of mental disorders, including anxiety or mood disorder, depression, and suicide, than the native-born and long-term immigrants (Di Thiene et al, 2015; Kwak 2016; Mossakowski 2007; Takeuchi et al., 2007; Williams et al., 2007; Wu & Schimele 2005). However, non-specific psychological distress, a common universal human experience reflecting a 'normal response to a stressful situation' (Mirowsky & Ross 2013: 30), was less of an interest to migrant health researchers until this decade (Gong et al., 2011; Montazer, Wheaton, & Noh, 2016). Recently, the development of psychological distress as a valid construct across different countries[16] has attracted comparable research attention to the area of migrant health (Angel, Buckley, & Sakamoto, 2001; Chung & Epstein, 2014; Gong et al., 2011; Jaggers & MacNeil, 2015; Molina & Alcantara, 2013; Montazer et al., 2016; Ritsner et al., 2000; Torres & Wallace, 2013; Yip et al., 2008).

Due to the dominance of the mental illness approach, limited research has paid attention to immigrants' positive mental health, defined by Keyes (2002) as symptoms of positive feelings and functioning. Surprisingly, self-rated mental health has also received minimal attention from Canadian researchers (Bergeron et al., 2009; Chadwick & Collins, 2015; Maximova & Krahn, 2010). Within the immigrant health literature, positive mental health measures, including positive mental health, subjective well-being, and happiness, are generally lacking. The concept and validity of positive mental health measured by the Mental Health Continuum scale have been replicated and supported by studies conducted in countries such as South Africa (Keyes, Wissing, Potgieter, & van Rooy, 2008), the Netherlands (Lamers et al., 2011), Iran (Joshanloo,

[16] Won & Hae (2015); Chan & Fung (2014); Furukawa (2008)

Wissing, Khumalo, & Lamers, 2013), Italy (Petrillo et al., 2015), Poland (Karas, Cieciuch, & Keyes, 2014), and the U.S. (Robitschek & Keyes, 2009). However, none of these studies have explored Canadian immigrants' positive mental health.

An American study by Harker (2001) suggests that when controlling for socio-economic disadvantage, foreign-born immigrants experience stronger positive mental health than their native-born counterparts. However, there is inconclusive evidence on the relationship between nativity status and subjective well-being: some studies suggest that foreign-born status is associated with better subjective well-being (Berry & Hou, 2016), while others suggest otherwise (Safi, 2010). Self-rated mental health has been studied quite extensively; however, evidence for healthy immigrant effects is also mixed (Dolly et al., 2012; Kwak, 2016).

Based on the literature review, it was hypothesized that immigrants have better self-rated mental health, lower psychological distress, stronger positive mental health and higher subjective well-being than non-immigrants. The first set of models compare the mental health of foreign-born and the native-born populations, with immigrant samples being stratified into groups based on length of migration. Table 5.1 and Table 5.2 present results based on CCHS-MH 2012 and GSS-SI 2013, respectively. The second set of models compare the mental health differences within immigrants across different lengths of migration.

Table 5.1 presents the nativity differences for three psychological outcomes: psychological distress, positive mental health, and self-rated mental health. Since the hypothesis being tested is whether long-term immigrants race and ethnicity, linguistic minority, household types, household income, education, work status, and place of residence.

In Model 1, without any controls, immigrants with various lengths of migration experience less distress than native-born Canadians. Long-term immigrants living in Canada more than 30

years, 40 years, and 50 years especially experience less distress than their native-born peers. In Model 2, with demographic and socio-economic controls, we see that the healthy immigrant effect primarily comes from most recent immigrants[17]. Long-term immigrants enjoy no less distress than native-born Canadians. These results generally support the hypothesis that long-term immigrants' mental health converges with that of non-immigrants.

With regards to positive mental health, Model 3 reveals that with no controls, three groups of immigrants, including immigrants 0-9 years, 30-39 years, and 40-49 years, enjoy better positive mental health than the native-born. With control variables, Model 4 shows that only immigrants 30-39 years have better positive mental health than the native-born, but the positive mental health advantages of this group are much attenuated after controls. The fact that recent immigrants do not enjoy better positive mental health than the Canadian-born defies the hypothesis of the healthy immigrant effect. Also contradicting the healthy immigrant effect is the fact that long-term immigrants, particularly those living in Canada for 30 to 39 years, enjoy better positive mental health than their Canadian-born peers, rather than converge with them. However, if we simply compare the nativity differences (immigrants versus non-immigrants) in positive mental health after demographic and socio-economic controls, there is no significant difference in positive mental health between these two groups (results not shown).
' mental health converges with native Canadians, associations between control variables and mental health measures will not be presented here, but the full models can be found in Appendix B. For all of the models, control variables include gender, age,

[17] Difference between foreign-born versus Canadian-born status on psychological distress after demographic and socio-economic controls is also significant, but the result is not shown here.

Model 5 shows the Canadian-born versus foreign-born effect on self-rated mental health without demographic and socio-economic controls. The most recent immigrants and long-term immigrants migrating to Canada between 10 to 19 years reported having better mental health than the Canadian-born respondents. Model 6 shows the association between nativity and self-rated mental health with demographic and socio-economic controls. With these controls, long-term immigrants 10-19 years no longer have mental health advantages over the native-born, while the most recent immigrants show even stronger self-rated mental health. This result supports previous findings on mental health convergence between long-term immigrants and the native-born population (Ali, 2002; Ali et al., 2004).

Table 5.1The effect of nativity on psychological distress, positive mental health, and self-rated mental health (CCHS-MH 2012) (N=25,113)

	Model 1 (Distress) Coefficient	Model 2 (Distress) Coefficient	Model 3 (PMH) Coefficient	Model 4 (PMH) Coefficient	Model 5 (MH) (odds ratio)	Model6 (MH) (odds ratio)
Migration	(no controls)	(with controls)	(no controls)	(with controls)	(no controls)	(with controls)
Canadian-born	------	-----	------	-----	------	-----
0-9 years	-.080***	-.061**	.110***	.049	1.632***	1.759***
10-19 years	-.055**	-.010	-.010	-.081	1.208**	1.055
20-29 years	-.080**	-.010	.084	.023	.883	1.054
30-39 years	-.144***	-.053	.179***	.117*	1.010	1.068
40-49 years	-.146***	-.035	.169***	.082	.885	1.074
50 years and more	-.125***	-.007	.059	-.026	1.066	.948
Constant	.640***	.746***	3.852***	3.706***		
Adjusted R^2	1.316%	9.682%	0.416%	6.339%		
Cut1					-2.714***	-2.376***
Cut2					-.972***	-.445***
Cut3					.642***	1.355***

*p<0.05. **p<0.01 ***p<0.001
*Control variables include gender, age, race and ethnicity, linguistic minority, household types, household income, education, work status, and place of residence.
Cut 1=Poor to fair versus good very good excellent
Cut 2=Poor to fair good /very good excellent
Cut 3= Poor to fair good very good /excellent

The following models in Table 5.2 utilize samples from GSS-SI 2013, which include 27,694 respondents. The two major dependent variables included in these models are subjective well-being and self-rated mental health. The self-rated mental health measure in GSS-SI 2013 is identical to that in CCHS-MH 2012. In both cases, respondents were asked to rate their mental

health based on a 5-point Likert Scale, from excellent, very good, good, fair, to poor. Since very few respondents rated their mental health as poor, fair and poor are merged into a single category.

Model 1 compares the effect of nativity status on subjective well-being. Only long-term immigrants living in Canada more than 50 years have better subjective well-being than the Canadian-born. In Model 2, where the socio-demographic and socio-economic controls were entered, most recent immigrants and long-term immigrants 0-9 years appear to have better subjective well-being than the Canadian-born. Previous research using GSS-SI 2013 also supports the healthy immigrant effect for subjective well-being (Berry & Hou, 2016).

Model 3 shows the nativity effect on self-rated mental health without controls. Both the recent immigrants and long-term immigrants 10-19 years enjoy some mental health advantages over the Canadian-born individuals, with the most recent immigrants enjoying even greater mental health advantages.

Model 4 shows the nativity effect on self-rated mental health with socio-demographic and socio-economic controls. The healthy immigrant effect for recent immigrants and long-term immigrants 10-19 years becomes stronger after adding socio-economic controls, suggesting that immigrants' lower socio-economic standings do negatively affect their mental health. However, some of the mental health advantages of immigrants cannot be explained away by considering their socio-economic status.

Table 5.2 The effect of nativity on subjective well-being and self-rated mental health (GSS-SI 2013) (N=27,694)

	Model 1 (SWB) Coefficient	Model 2 (SWB) Coefficient	Model 3 (MH) (odds ratio)	Model 4 (MH) (odds ratio)
Migration	(no controls)	(with controls)	(no controls)	(with controls)
Canadian-born	------	-----	------	-----
0-9 years	.023	.040*	1.632***	1.649***
10-19 years	.013	.034*	1.208**	1.241**
20-29 years	-.018	.002	.883	.919
30-39 years	.028	.030	1.010	1.018
40-49 years	.005	-.019	.885	.860
50 years and more	.071***	.031	1.066	1.084
Constant	2.777***	2.770***		
Adjusted R^2	0.137%	6.777%		
Cut1			-2.714***	-2.821***
Cut2			-.972***	-1.023***
Cut3			.643***	.641***

*p<0.05. **p<0.01 ***p<0.001
*****Control variables include gender, age, race and ethnicity, linguistic minority, household types, household income, education, main activity, and place of residence.
Cut 1=Poor to fair versus good very good excellent
Cut 2=Poor to fair good /very good excellent
Cut 3= Poor to fair good very good /excellent

To summarize, results based on both CCHS-MH 2012 and GSS-SI 2013 suggest that healthy immigrant effects come from the mental health advantages of most recent immigrants, and to some degree from long-term immigrants in Canada for 10 to 19 years. Mental health advantages of recent immigrants appear even stronger when controlling for socio-economic disadvantages. However, there are several potential explanatory factors for mental health that are unaccounted for due to research limitations. Two important psychological resources, sense of mastery and self-esteem, are excluded from the models, though previous research does suggest that immigrants and racial minorities have a lower sense of mastery (Chaze & Robson, 2014) and lower self-esteem than the native-born (Bankston & Zhou, 2002).

In the following models, only immigrants are included in the analysis. The hypothesis being tested is whether long-term immigrants have poorer mental health than recent immigrants. Control variables are not presented in the models but the full models can be found in the Appendix B. Control variables for models based on CCHS-MH 2012 and GSS-SI 2013 are

slightly different. Controls for models derived from CCHS-MH2012 include gender, age, household type, education, household income, work status, country of origin, place of residence, language spoken at home, and minority status; for GSS-SI 2013, additional controls include landed program and citizenship status, as well as more defined categories of race and ethnicity. For example, the category of race and ethnicity is defined as minority with single race, minority with multiple ethnicities, white with single ethnicity, and white with multiple ethnicities.

Table 5.3 presents the results of the regression models based on immigrant samples taken from CCHS-MH 2012. In Model 1, long-term immigrants living in Canada for 30 to 39 years and 40 to 49 years are less distressed than their most recent counterparts. Yet, after adding demographic controls to Model 2, the pattern flipped. Immigrants 10-19 years and immigrants 20-29 years appear more distressed than the most recent immigrants, thus supporting the healthy immigrant effect on psychological distress.

In Table 5.3, the results from Models 3 and 4 indicate that the healthy immigrant effect is reversed with and without demographic controls. Without demographic controls, immigrants living in Canada for 10 to 19 years have more positive mental health than the newly migrated. After adding demographic and socio-demographic controls, immigrants 10-19 years experience worse positive mental health, which also supports the healthy immigrant effect for positive mental health.

Model 5 in Table 5.3 show that, without demographic controls, there is strong health immigrant effect for self-rated mental health. Nevertheless, this effect drastically decreases with controls; only immigrants living in Canada for 10 to 19 years or 20 to 29 years have worse self-rated mental health than the newly migrated. This mental health deterioration pattern also lends support to current literature on the healthy immigrant effect (Ali, 2002, 2004).

Table 5.3 The effect of migration on psychological distress, positive mental health, and self-rated mental health (CCHS-MH 2012) (N=4,282)

	Model 1 (Distress)	Model 2 (Distress)	Model 3 (PMH)	Model 4 (PMH)	Model 5 (MH)	Model6 (MH)
	Coefficient	Coefficient	Coefficient	Coefficient	(odds ratio)	(odds ratio)
Migration	(no controls)	(with controls)	(no controls)	(with controls)	(no controls)	(with controls)
0-9 years	------	-----	------	-----	------	-----
10-19 years	.076	.170*	1.673*	-1.780**	.641***	.667**
20-29 years	-.002	.186*	-.400	-.643	.634**	.684*
30-39 years	-.202*	.022	.925	.792	.623***	.761
40-49 years	-.213**	.081	.834	.945	.687**	.870
50 years and more	-.146	.093	-.761	.205	.603***	.848
Constant	1.771***	1.857***	55.513***	54.951***		.948
Adjusted R^2	0.754%	9.632%	0.749%	8.461%		
Cut1					-3.063***	-3.036***
Cut2					-1.121***	-.975**
Cut3					.481***	.710*

*p<0.05. **p<0.01 ***p<0.001
*Control variables include gender, age, race and ethnicity, country of origin, linguistic minority, household types, household income, education, work status, and place of residence.
Cut 1=Poor to fair versus good very good excellent
Cut 2=Poor to fair good /very good excellent
Cut 3= Poor to fair good very good /excellent

Previous studies have found that immigrants generally have lower subjective well-being despite having good mental health (Stillman Gibson, McKenzie, & Rohorua, 2015). Table 5.4 shows results for data taken from the GSS-SI 2013. Model 1 and Model 2 in Table 5.4 indicate that there is little to no evidence of a healthy immigrant effects on subjective well-being before and after demographic controls. Without controls, immigrants living in Canada for more than 50 years appear to have better subjective well-being than the most recent immigrants, but after controls their subjective well-being is no longer stronger. Nor do immigrant categories have an effect on subjective well-being when controlling for duration of migration, socio-economic and socio-demographic backgrounds. In GSS-SI 2013, the measurement of subjective well-being is essentially a question of immigrants' current life satisfaction. GSS-SI 2013 asked immigrant respondents to rate their current life satisfaction based on a 10-point scale, and the results indicate that Canadian immigrants' subjective well-being does not significantly vary by years of

migration. This finding is consistent with other studies finding that immigrants subjective well-being or life satisfaction do not improve with time or across generation (Safi, 2010).

Models 3 and 4 in Table 5.4 show that healthy immigrant effects for self-rated mental health exist before and after demographic controls, and that the healthy immigrant effect appears strong after controls. The result supports the healthy immigrant effect for self-rated mental health. But the existence of healthy immigrant effects for self-rated mental health might be highly conditional on the selection of demographic controls and sample size, since only two groups of long-term immigrants have worse self-rated mental health than recent immigrants based on CCHS-MH2012, but the healthy immigrant effect for self-rated mental health based on GSS-SI 2013 appears stronger (4 out 5 long-term immigrant cohorts have significantly worse self-rated mental health than the most recent cohort).

Most immigrant categories are not associated with self-rated mental health after controlling for duration of migration, socio-economic and socio-demographic conditions. However, without controls, various immigrant categories fare a lot worse in self-rated mental health compared to economic class with dual citizenship, including economic class with single Canadian citizenship, family class with dual citizenship, family class with single Canadian citizenship, and refugees with single Canadian citizenship. When it comes to self-rated mental health, other immigrant categories do not differ significantly from those of the economic class with dual citizenship.

Table 5.4 The effect of migration on subjective well-being and self-rated mental health (GSS-SI2013) (N=9,486)

	Model 1 (SWB) Coefficient	Model 2 (SWB) Coefficient	Model 3 (MH) Odds ratio	Model 4 (MH) Odds ratio
Migration	(no controls)	(with controls)	(no controls)	(with controls)
0-9 years	------	-----	------	-----
10-19 years	-1.150	-.534	.764**	.776*
20-29 years	-1.882	-.959	.555***	.619***
30-39 years	2.065	1.727	.639***	.712*
40-49 years	-.007	-1.728	.548***	.570***
50 years and more	5.353***	3.033	.669***	.767
Immigrant Category				
Economic class with dual citizenship		------		------
Economic class with single Canadian citizenship		-1.301		.898
Economic class with permanent resident status		-.562		.946
Family class with dual citizenship		-.608		.835
Family class with single Canadian citizenship		-2.075		.817
Family class with permanent resident status		-.334		.896
Refugee with dual citizenship		-3.194		.846
Refugee with single Canadian citizenship		.464		.605*
Refugee with permanent resident status		.653		1.023
Other landed programs		-.602		.964
Citizenship status undetermined		3.473		1.148
Others (student visa, work visa, etc.)		-1.276		.896
Constant	66.060***	67.641***		
Adjusted R^2	0.716%	8.169%		
Cut1			-2.714***	-3.525***
Cut2			-.972***	-1.498***
Cut3			.643***	.046

*p<0.05. **p<0.01 ***p<0.001

*Control variables include gender, age, race and ethnicity, country of origin linguistic minority, household types, household income, education, main activity, and place of residence.

Cut 1=Poor to fair versus good very good excellent

Cut 2=Poor to fair good /very good excellent

Cut 3= Poor to fair good very good /excellent

5.2 Explanations for the disappearance of healthy immigrant effect: health behavior versus social disparity

The disappearance of the healthy immigrant effect in migrant health studies is mainly attributed to negative acculturation, which include immigrants' uptake of unhealthy lifestyles, and to some extent economic and social exclusion, including occupational downgrading, residential segregation, and racial discrimination (Dean & Wilson, 2009; Flippen & Parrado, 2015; Frank et al., 2010; Riosmena, Everett, Rogers, & Dennis, 2015). Immigrants' changing health behavior is conceptualized as loss of cultural buffering or behavioral assimilation, and treated as a major cause of their health deterioration (Antecol & Bedard, 2006; Kaplan et al.,

2004). Economic and social exclusions are commonly defined as social disparities that produce health inequalities (Franks et al., 2003; Williams et al., 2007; Williams & Sternthal, 2010). The relative importance of the cultural buffering and social disparity perspectives are rarely compared empirically. As such, the research question asks to what degree are social disparity, behavioral assimilation, and a combination of both perspectives empirically supported in their capacity to explain Canadian immigrants' psychological outcomes.

5.3 Determinants of health: the relative importance of behavioral and structural determinants

In Chapter 2, I hypothesized that compared to behavioral determinants, structural determinants would play a larger role in explaining Canadian immigrants' psychological outcomes. But since behavioral determinants still make a unique contribution to psychological outcomes, I further proposed that an integrated model combining both sets of determinants would have the most explanatory power in capturing Canadian immigrants' mental health variations, including psychological distress, positive mental health, and self-rated mental health.

5.3.1 Social determinants of psychological distress

Table 5.5 shows the relative importance of behavioral determinants, structural determinants, and a complementary model of both sets of determinants. There are three groupings of structural determinants, including socio-demographic, socio-economic, and socio-psychological determinants. The rationale for separating these variables is to distinguish the primary determinants of health from the secondary ones. Some studies treat socio-demographic and socio-economic variables as primary determinants of health, and social support as secondary determinants of health (Kosteniuk & Dickinson, 2003), while others separate socio-demographic, socio-economic, and socio-psychological determinants to study immigrants, as immigrants'

socio-economic conditions are shaped by duration of migration and country of origin (Zhao et al., 2010). Additionally, socio-demographic variables are separated from socio-economic variables because immigrants' socio-economic status and language abilities are relatively more modifiable than their socio-demographic backgrounds.

In Model 1, five behavioral determinants including BMI, exercise levels, drinking type, smoking type, and substance use were entered into the equation. Here, BMI serves as a proxy for dietary habits, since CCHS-MH 2012 did not include variables of dietary preferences and food consumption. The R^2 for psychological distress is relatively small, accounting for only 2.92 of the variance. However, the results do suggest that some behavioral inputs are associated with psychological distress. For example, regular exercise helps reduce distress, but the results do not show consistent findings on the association between exercise time and distress. Not all exercise episodes significantly reduce distress. This inconsistency may be caused by the variable measuring the amount of time respondents exercise for each episode, but not the frequency of exercise.

Drinking behaviors are not associated with psychological distress. However, being an occasional smoker who transitioned from a daily smoker is associated with higher distress compared to those who have never smoked. Former daily smokers are less distressed than those who have never smoked. Consistent with previous literature, substance use is associated with higher distress (Hansell & White, 1991).

In Model 2, socio-demographic determinants were entered. Socio-demographic determinants alone explain 5.64% of the variance in psychological distress for immigrants. Gender and age are particularly strong socio-demographic determinants shaping immigrants' psychological distress. Long-term immigrants living in Canada for 10-19 years and for 20-29

years experience more psychological distress than the most recent immigrants, but not other groups of long-term immigrants.

In Model 3, socio-demographic and behavioral determinants were entered into the equation together. The influences of socio-demographic and behavioral determinants do not overlap much (2.922%+5.641%-8.155%=0.408%). The overlapping influences are around 0.4%, suggesting that these two types of determinants make unique contributions to psychological distress. Entering socio-demographic determinants does not alter the pattern of behavioral influences on psychological distress. If anything, they either strengthen or weaken the behavioral influences on psychological distress. For example, accounting for the differences in socio-demographic determinants, the beneficial effect of exercise on psychological distress becomes larger, and the detrimental effect of drug use becomes smaller. However, the effect of drinking and smoking on psychological distress are inconsistent after accounting for socio-demographic influences.

Model 4 shows the association between socio-economic determinants and psychological distress for Canadian immigrants, controlling for socio-demographic determinants. Adding socio-economic variables explains additional 4% of the variance (9.632%-5.641%=3.991%), suggesting that immigrants' levels of psychological distress are more influenced by socio-demographic factors than socio-economic ones. Furthermore, including socio-economic variables in the model does not alter the significant association between gender, age, years of migration and psychological distress. If anything, the coefficients for the association between years of migration and psychological distress become stronger. Interestingly, income levels are not associated with psychological distress for immigrants. Level of education is also not associated with psychological distress, except for those who had some post-secondary training.

Another socio-economic variable significantly associated with higher psychological distress is being an unmarried person, including singles, the divorced, and the separated. Being permanently unable to work—a high risk status—is expectedly associated with higher distress. Working part-time is also associated with higher distress, since many of the part-time jobs are precarious in nature. Being a retiree or above working age is associated with higher distress than those currently working. Interestingly, belonging to the linguistic minority group that speaks a language other than English and French at home is associated with lower distress.

Model 5 presents the effect of socio-economic and behavioral determinants on psychological distress. Together, these two sets of determinants explain around 8% of the variance in psychological distress. Accounting for socio-economic differences also enhances the beneficial effect of exercise, and reduces the harmful effect of drug use on psychological distress. The effect of former daily smoking and occasional smoking on psychological distress also reduces. However, regular drinking is associated with higher psychological distress when socio-economic determinants are held constant.

Model 6 presents the association between socio-psychological variables, controlling both the socio-demographic and socio-economic variables. The results show that social support reduces distress, while interpersonal strain increases it. Including socio-economic variables such as social support and interpersonal strain in Model 4, increases the R^2 to 26.78%. This finding suggests that socio-psychological determinants are most influential in shaping immigrants' psychological distress. Socio-psychological determinants also help explain away one particular socio-demographic influence, years of migration, on psychological distress. Other socio-demographic influences such as gender, age, work status and work conditions, still persist after

socio-psychological determinants enter into the model. Considering the influence of social support and interpersonal strain, the mental health advantage of the linguistic minority group that only speak languages other than English or French at home disappears, but the advantage of speaking either one of the official languages and a third language as an immigrant remains.

Model 7 presents the effect of psychosocial and behavioral determinants on psychological distress. The harmful effect of former daily smoking and occasional smoking on psychological distress reduces when accounting for psychosocial determinants. The effect of exercise on psychological distress is inconsistent when accounting for psychosocial determinants. Exercising over 2 hours is associated with less psychological distress, while exercising for 16 to 30 minutes is associated with higher psychological distress.

Model 8, the complementary model, includes both the behavioral and structural determinants. In the presence of all sets of structural determinants (entered in previous models), exercising 31 to 60 minutes and over 2 hours continue to have protective effect, and substance use continues to have deleterious effect (though attenuated), on psychological distress for Canadian immigrants. When accounting for structural determinants, smoking behavior ceases to have an association with psychological distress. However, being obese and a regular drinker have a significant association with psychological distress after structural determinants are held constant. Based on the results of the complementary model, I argue that the effects of behavioral determinants, though having minimal effects on psychological distress, are distinctively different from those of structural determinants. The influences of behavioral determinants on distress are not eliminated by structural determinants. The presence of behavioral determinants, however, also does not change most of the significant effects of structural determinants on psychological

distress for Canadian immigrants. For example, the coefficients of social support and interpersonal strain have minimal change after behavioral determinants were included in the model. The major change in the structural determinants is that immigrants with a graduate degree are more distressed than those without a high school degree. A possible interpretation is that immigrants with a graduate degree have healthier health behaviors, so when the behavioral dimension is accounted for, their mental health advantages diminish.

The important message is this: immigrants' psychological distress is largely determined by structural forces. Immigrants can have the best health-promoting behaviors, but their mental health is still going to deteriorate if structural determinants such as precarious working conditions and interpersonal conflicts—which we know have deleterious effects on psychological distress—remain.

Comparing the R^2 of Model 8 against Model 6, the complementary model including both behavioral and structural determinants increases the explained variance by an additional 1%. The likelihood ratio test ($p<0.001$) indicates that, though the additional variance explained is small, the change in R^2 from the structural determinants model to the complementary model is significantly larger. The likelihood ratio test suggests that the complementary model is a better model than the model considering only the structural determinants.

In sum, based on the R^2 change and Likelihood ratio test, it can be concluded that structural determinants have a larger role in determining Canadian immigrants' psychological distress than behavioral determinants. However, the presence of structural determinants does not fully take away the explanatory power from the behavioral determinants. Though the R^2 change between Model 6 and Model 8 is small, the likelihood ratio test suggests that the complementary model is

an improvement of the structural determinants model in explaining Canadian immigrants' psychological distress patterns. These results also suggest that compared to the behavioural assimilation hypothesis, the social disparity perspective has more explanatory power to interpret mental health inequalities among immigrants.

Table 5.5 The effect of health determinants on psychological distress (CCHS-MH 2012) (N=4,282)

Model 1=Behavioral determinants only
Model 2=Socio-demographic determinants only
Model 3=Socio-demographic determinants + Behavioral determinants
Model 4=Socio-demographic determinants +Socio-economic determinants
Model 5=Socio-economic determinants +Behavioral determinants
Model 6=Socio-demographic determinants +Socio-economic determinants +Psychosocial determinants
Model 7= Psychosocial determinants + Behavioral determinants
Model 8 = Socio-demographic determinants +Socio-economic determinants+ Psychosocial determinants + Behavioral determinants

Variable	Model 1 Coefficient	Model 2 Coefficient	Model 3 Coefficient	Model 4 Coefficient	Model 5 Coefficient	Model 6 Coefficient	Model 7 Coefficient	Model 8 Coefficient
Body mass index								
Normal	-----		-----		-----		-----	------
Underweight	.197		.096		.204		.088	.030
Overweight	-.034		.024		-.012		-.002	.031
Obese	.088		.142		.056		.109	.132*
Exercise levels								
None	-----		-----		-----		-----	------
0-15 mins	-.116		-.099		-.102		-.102	-.081
16-30 mins	.011		-.011		-.024		.037	.009
31-60 mins	-.172*		-.221**		-.180**		-.147*	-.161**
61 mins to 2 hrs	.001		-.063		-.010		-.020	-.060
> 2hrs	-.218**		-.227**		-.227**		-.240**	-.200**
Drinking type								
Non-drinker	-----		-----		-----		-----	------
Occasional drinker	.119		.138		.107		.091	.119
Regular drinker	.113		.184**		.154**		.059	.156**
Smoking type								
Non-smoker	-----		-----		-----		-----	------
Former occasional smoker	-.057		.009		-.061		-.091	-.049
Former daily smoker	-.198**		-.004		-.187**		-.156**	-.042
Occasional smoker (former daily)	.349*		.321*		.305		.173	.212
Occasional smoker	-.077		.011		-.122		-.141	-.016
Daily smoker	.115		.222*		.044		.032	.085
Drug use								
Yes	.340***		.273***		.308***		.200	.137***
Migration								
0-9 years		-----	-----	------		------		------
10-19 years		.164*	.149	.170*		.104		.103
20-29 years		.183*	.133	.185*		.097		.081
30-39 years		.088	.021	.022		-.022		-.048
40-49 years		.146	.054	.081		.007		-.038
50 years and more		.207	.136	.093		.018		-.017
Females (Males=0)		.225***	.293***	.192***		.187***		.219***
Age range								
19-24		-----	-----	------		------		------
<18		.018	.171	.176		.119		.216
25-34		-.374***	-.378***	-.261*		-.225*		-.229*
35-44		-.507***	-.470***	-.386***		-.351***		-.340***
45-54		-.628***	-.559***	-.520***		-.459***		-.431***
55-64		-.700***	-.628***	-.599***		-.507***		-.478***
65 and more		-.978***	-.836***	-.828***		-.636***		-.577***
Minority(White=0)		-.006	.046	.009		-.023		.012
Country of origin								
U.K		-----	-----	------		------		------
North America		.250*	.212	.223		.249*		.230*
South & Central America/Caribbean		-.073 -.049	-.056 -.030	-.018 .055		.137 .153		.125 .152

Other Europe		.276	.280	.385*		.423*		.414*
Germany		.188	.237	.279		.233		.263
Netherlands		.049	.091	.225		.409***		.408***
Italy		-.018	.082	.055		.197		.242
Africa		-.254	.127	-.077		-.086		-.054
China/Hong Kong/Taiwan		-.145	-.129	-.018		.070		.060
Philippines		-.251	-.130	-.086		.060		.106
India		.023	.127	.156		.174		.222
Other Asia		.105	.097	.263		.385		.364
Oceania								
Household type								
Married couple				------	-----	------		------
Couples with children				.029	.163**	.026		.308
Single/widowed/separated/divorced				.130*	.199***	.083		.080
Extended family				-.117	-.043	.000		-.005
Female lone parent				.050	.227	.011		.016
Other types				-.047	-.030	-.025		-.023
Income level								
Lowest				------	-----	------		------
Lower-middle				.095	.050	.118		.120
Upper-middle				-.010	-.056	.088		.090
Highest				-.082	-.176*	.011		.001
Education								
Less than high school				------	-----	------		------
High school				.124	.152	.084		.115
Some post-sec.				.316*	.406***	.235*		.231*
Trade certificate				.097	.014	-.005		.030
College/university certificate				.099	.098	.044		.071
Bachelor's degree				.160	.134	.105		.121
Higher than bachelor's degree				.151	.163	.162		.203*
Work status								
Currently working				------	-----	------		------
Not working				.068	.066	.229		.220
Permanently unable to work				1.476***	1.350***	1.268***		1.208***
Retired or above working age				.087	-.140	.314*		.207*
Working conditions								
Full-time				------	-----	------		------
Part-time				.230*	.306***	.269**		.265**
School/Household/Retirement				-.037	-.033	-.106		-.068
Linguistic minority								
English or French				------	-----	------		------
English or French, and Other				-.167*	-.044	-.161*		-.143*
Other languages only				-.240**	-.179**	-.121		-.109
Place of residence								
1st-tier immigrant receiving city				------	-----	------		------
2rd-tier immigrant receiving city				.110	.122	.067		.083
Other cities				-.009	.008	.012		.025
Social support						-.769***	-.724***	-.753***
Interpersonal strain						.455***	.485***	.443***
Constant	1.659***	2.133***	1.850***	1.857***	1.475***	5.681***	5.396***	5.400***
Adjusted R^2	2.922%	5.641%	8.155%	9.632%	7.914%	26.781%	21.909%	27.794%

p<0.05* p<0.01** p<0.001***

5.3.2. Social determinants of positive mental health

Table 5.6 shows the relative importance of behavioral and structural determinants on Canadian immigrants' positive mental health. Model 1 presents the association between behavioral determinants and positive mental health. Together, behavioral determinants explain 4.15% of the variance in positive mental health for Canadian immigrants. Compared to their influence on

psychological distress (R^2=2.92%), behavioral determinants have a larger role in shaping immigrants' positive mental health. The results suggest that, generally, exercising enhances positive mental health, but not every exercise duration is significantly associated with better positive mental health (as frequency of exercise is not controlled for). Being a regular drinker and daily smoker reduce positive mental health. Lifetime substance use also decreases positive mental health.

As the most unchangeable structural determinants, socio-demographics were entered in Model 2 without controlling socio-economic and socio-psychological determinants. Socio-demographic determinants explain 4.63% of the variance in positive mental health for immigrants. Surprisingly, the influence of socio-demographic determinants on positive mental health for immigrants is not much larger than that of behavioral determinants. Long-term immigrants living in Canada for 10 to 19 years are the only group that has significantly less positive mental health than the most recent ones. There is no gender effect on positive mental health, as opposed to psychological distress. The age effect on positive mental health also is not as strong as it has on psychological distress. Older immigrants and middle-aged immigrants in their forties and fifties have significantly better positive mental health than young adults (19-14 years old), and they also experience less psychological distress (see Model 2 to Model 5 in Table 5.5). Immigrants from India and the Philippines possess better positive mental health than immigrants from the U.K.

Model 3 presents the effect of behavioral determinants on positive mental health accounting for socio-demographic influences. Compared to Model 1, the beneficial effect of exercise on positive mental health reduces, while the harmful effect of daily smoking, drinking, and drug use increase consistently.

Model 4 shows the association between socio-economic determinants and positive mental health when controlling the socio-demographic influences. The results suggest that without the influence of other behavioral and socio demographic determinants, immigrants living in Canada for 10 to 19 years are the only group with significantly less positive mental health than the most recent immigrants. The R^2 increases from 4.61% to 8.46%. The unique contribution of socio-economic determinants to positive mental health is 3.85%, which is smaller than that of the socio-demographic and behavioral determinants.

The competing influence of socio-demographic and socio-economic determinants on positive mental health shows that the positive mental health advantages for middle age immigrants mainly come from financial security. Once the socio-economic conditions are controlled for, middle age immigrants no longer have better positive mental health than young immigrants. The positive mental health advantage for immigrants from India and the Philippines also disappear when socio-economic influences are held constant. However, immigrants from Germany, China, Hong Kong, and Taiwan experience significantly worse positive mental health than British immigrants. Speaking multiple languages, including one of the official languages and a third language protects positive mental health, but there is no positive mental health advantage if immigrants speak only a third language other than English and French at home.

There is no income or education gradient effect on positive mental health. Being single, divorced, or separated harms positive mental health, whereas living in an extended family protects positive mental health. Being permanently unable to work is the only type of working condition that adversely affects positive mental health.

Model 5 shows the effect of behavioral determinants on positive mental health when accounting for the socio-economic differences. The association between exercise and positive

mental health decreases, while the association between drinking/drug use and positive mental health increases. These two patterns are consistent with the relationship between behavioral determinants and positive mental health. However, accounting for the influence of socio-economic differences, daily smoking has no effect on positive mental health.

In Model 6, all groups of structural determinants were entered. Adding psychosocial determinants increases the R^2 from 8.46% to 27.46%, suggesting that socio-psychological determinants are most influential in shaping immigrants' positive mental health. The individual contribution of psychosocial determinants is 19%. The result shows that social support is a strong protective factor for positive mental health, while the effects of interpersonal strain are detrimental. Considering the presence of social support and interpersonal strain, the benefit of marriage and extended family largely disappears. The mental health benefits of marriage and extended family largely come from social support. However, other socio-economic conditions are more strongly associated with positive mental health after controlling for social support and interpersonal strain. For instance, immigrants who are not currently working or retired have worse positive mental health when psychosocial determinants are held constant. This result shows that immigrants who are not working and retired rely on social support from others. Without the social support, their positive mental health would be severely affected. This was most clearly shown in Model 6: when entering social support and interpersonal strain, the coefficients between not working and being retired became more negative. Having upper-middle household income is associated with less positive mental health compared to those in the lowest household income category. In Model 2 and Model 4, the positive mental health of immigrants with upper-middle household income is not significantly different from others with lower or higher household income levels. This perhaps shows that immigrants with upper-middle

household income have stronger social support to enhance their positive mental health. When this advantage is held constant, their positive mental health is actually much worse than those of lower household income categories.

Immigrants from Germany, Italy, and other European countries appear to have less positive mental health when psychosocial determinants are controlled for, while immigrants from China, Hong Kong, and Taiwan no longer experience worse positive mental health than British immigrants. This result suggests that immigrants from China, Hong Kong, and Taiwan might have low social support or high interpersonal strain, so that when these two psychosocial determinants are held constant (as if all ethnic groups of immigrants have the same level of psychosocial resources), their positive mental health is no longer significantly worse than British immigrants. Conversely, immigrants from Germany, Italy, and other European countries experience the opposite: their psychosocial resources might be stronger than those of British immigrants when it comes to enhancing positive mental health, and once that advantage is held constant, their positive mental health is actually much weaker than that of British immigrants.

Model 7 shows the association between behavioral determinants and positive mental health when accounting for psychosocial determinants. Under the influence of psychosocial determinants, the benefits of exercise decreased. The harmful effect of drug use, drinking and daily smoking also decreased.

In Model 8, both the behavioral and structural determinants were entered into the model. When competing against structural determinants, the individual contribution of behavioral determinants reduces from 4.15% (R^2 from Model 1) to 2.52% (R^2 from Model 6 - R^2 from Model 8). This suggests that some behavioral and structural determinants have overlapping influences on positive mental health (or alternatively, some health behaviors are derived from

structural influences). Despite these overlapping influences, however, some health behaviors, such as exercise and drinking, still have unique influences on positive mental health.

Long-term immigrants residing in Canada for 10 to 19 years have worse positive mental health than the most recent immigrants when both behavioral and structural determinants are held constant. However, considering the influences of both sets of determinants does close the gap between the positive mental health of long-term immigrants (10-19 years) and the most recent immigrants. This enduring gap suggests that there are other influences on this particular cohort of long-term immigrants not captured by the current models, although this is not the case for psychological distress (see Table 5.5 Model 8).

Though the R^2 change between Model 6 and Model 8 is relatively small (2.52%). The likelihood ratio test ($p<0.001$) indicates that the complementary model (Model 8) including both behavioral and structural determinants is better than those which only consider the effect of one set of health determinants on positive mental health.

Table 5.6 The effect of health determinants on positive mental health (CCHS-MH 2012) (N=4,282)

Model 1=Behavioral determinants only
Model 2=Socio-demographic determinants only
Model 3=Socio-demographic determinants + Behavioral determinants
Model 4=Socio-demographic determinants +Socio-economic determinants
Model 5=Socio-economic determinants +Behavioral determinants
Model 6=Socio-demographic determinants +Socio-economic determinants +Psychosocial determinants
Model 7= Psychosocial determinants + Behavioral determinants
Model 8 = Socio-demographic determinants +Socio-economic determinants+ Psychosocial determinants + Behavioral determinants

Variable	Model 1 Coefficient	Model 2 Coefficient	Model 3 Coefficient	Model 4 Coefficient	Model 5 Coefficient	Model 6 Coefficient	Model 7 Coefficient	Model 8 Coefficient
Body mass index								
Normal	------		------		-----		-----	------
Underweight	-1.155		-.222		-1.188		-.170	.404
Overweight	.641		.114		.557		.447	-.012
Obese	.903		.234		.984		.825	.408
Exercise levels								
None	-----		-----		-----		-----	------
0-15 mins	1.544		.996		1.610*		1.044	.678
16-30 mins	3.387***		3.071***		3.226***		2.837***	2.453***
31-60 mins	3.524***		3.445***		3.240***		2.707***	2.593***
61 mins to 2 hrs	1.016		1.178		.767		.621	.713
> 2hrs	2.789***		2.498**		2.378**		2.206**	1.654*
Drinking type								
Non-drinker	-----		-----		-----		-----	------
Occasional drinker	-1.089		-1.470**		-1.395*		-1.130*	-1.578**
Regular drinker	-1.561**		-2.051***		-2.015***		-1.597**	-1.896***
Smoking type								
Non-smoker	-----		-----		-----		-----	------
Former occasional smoker	.044		-.069		.080		.180	.141
Former daily smoker	-.656		-1.171		-.552		-.872	-1.038
Occasional smoker(former daily)	.927		1.117		1.304		2.116	1.900
Occasional smoker	-1.049		-2.330		-1.231		-.544	-2.280
Daily smoker	-1.826*		-1.940*		-1.085		-.936	-.900
Drug use								
Yes	-2.137***		-2.434***		-2.200***		-1.830***	-1.604***
Migration								
0-9 years		-----	-----	------		------		------
10-19 years		-1.639*	-1.361*	-1.779*		-1.608**		-1.446*
20-29 years		-.603	-.287	-.643		-.569		-.461
30-39 years		.360	1.069	.792		.363		.732
40-49 years		.471	1.163	.945		.858		1.208
50 years and more		-.577	-.041	.205		.089		.296
Females (Males=0)		-.029	-.918	.163		-.166		-.871
Age range								
19-24		-----	-----	------		------		------
<18		-1.169	-2.722	-1.874		-1.156		-2.073
25-34		.310	.764	-.597		-1.103		.266
35-44		1.889*	1.833*	.758		1.432		1.540
45-54		2.583**	2.292*	1.675		2.442**		2.403**
55-64		1.393	1.059	.988		1.792		1.666
65 and more		2.743**	1.939	2.476*		2.522*		2.183
Minority(White=0)		.068	-.294	.027		.617		.373
Country of origin								
U.K		-----	-----	------		------		------
North America		-.535	-.189	-.512		-.932		-.703
South & Central America/Caribbean		.965	.469	.445		-.667		-.778
Other Europe		-.049	-1.044	-1.635		-1.999*		-1.875*
Germany		-2.355	-2.799	-3.313*		-3.481*		-3.702*
Netherlands		-1.021	-1.472	-2.132		-1.286		-1.394

Italy		-1.322	-2.146	-2.309		-3.348**		-3.617**
Africa		1.599	.167	.768		-.410		-1.300
China/Hong Kong/Taiwan		-2.012	-2.894*	-3.243*		-2.174		-2.582*
Philippines		3.894**	3.621**	2.520		1.911		1.988
India		3.549**	1.952	1.793		.899		-.033
Other Asia		-.638	-1.902	-1.890		-1.509		-2.183
Oceania		-1.062	-1.465	-2.322		-2.989		-3.014
Household type								
Married couple				------	-----	------		------
Couples with children				.582	-.168	.424		.172
Single/widowed/separated/divorced				-1.952***	-2.086***	-.933		-.865
Extended family				2.113*	2.161*	1.140		1.097
Female lone parent				.048	-.354	.723		.626
Other types				-1.759	-1.794	-1.890		-1.697
Income level								
Lowest				------	-----	------		------
Lower-middle				.003	.337	-.153		-.154
Upper-middle				-1.029	-.656	-2.057***		-1.837**
Highest				.283	.940	-1.013		-.708
Education								
Less than high school				------	-----	------		------
High school				-.143	-.027	.250		.396
Some post-sec.				-.793	-.884	-.014		.231
Trade certificate				.572	1.407	1.169		1.273
College/university certificate				-.290	.342	-.110		-.028
Bachelor's degree				.594	.759	.660		.753
Higher than bachelor's degree				.593	.637	-.090		-.114
Work status								
Currently working				------	-----	------		------
Not working				-1.205	-.751	-2.565*		-2.232*
Permanently unable to work				-11.376***	-9.930**	-8.889**		-8.399**
Retired or above working age				-1.387	.379	-3.149*		-2.695*
Working conditions								
Full-time				------	-----	------		------
Part-time				-.976	-1.308	-1.238		-1.169
School/Household/Retirement				.646	-.121	1.516		1.025
Linguistic minority								
English or French				------	-----	------		------
English, French, and Other				1.536*	-.046	1.439**		1.107*
Other languages only				.976	-.842	.350		.158
Place of residence								
1st-tier immigrant receiving city				------	-----	------		------
2rd-tier immigrant receiving city				-.651	-.045	-.409		-.414
Other cities				.222	.580	-.048		-.066
Social support						10.166***	10.371***	10.057***
Interpersonal strain						-2.498***	-2.243***	-2.320***
Constant	54.749***	53.805***	55.479***	54.954***	55.579***	-1.667***	-3.480	.009***
Adjusted R^2	4.145%	4.628%	8.829%	8.461%	7.855%	27.455%	24.210%	29.971%

p<0.05* p<0.01** p<0.001***

5.3.3 Social determinants of self-rated mental health

Table 5.7 shows the association between behavioral determinants, structural determinants, and their association with self-rated mental health for immigrants. Model 1 shows the association between behavioral determinants and self-rated mental health. The benefit of exercise on mental health is obvious. But minimal exercise does not significantly increase mental health. For example, exercising less than 30 minutes does not significantly increase mental health. Drinking

behaviors are not associated with self-rated mental health, and nor are most smoking behaviors. Only being a daily smoker significantly reduces mental health. Surprisingly enough, drug use is not associated with self-rated mental health.

Model 2 shows the association between socio-demographic determinants and self-rated mental health. Immigrants 10-19 years is the only long-term immigrant group that has significantly worse mental health than the most recent immigrants. Gender has no effect on self-rated mental health when not controlling for socio-economic and psychosocial determinants. Age does not have a consistent effect on mental health. The only age group with significantly worse mental health than the young adult age group (19-24 years of age) is immigrants between 55 and 64 years of age. Immigrants from the Philippines have significantly stronger self-rated mental health than those from the United Kingdom, but not any other sending countries.

Model 3 shows the effect of behavioral determinants on positive mental health when controlling for socio-demographic determinants. The association between exercise and self-rated mental health increases significantly for respondents who exercise for 31 to 60 minutes per exercise episode, but decreases for any other categories (and the association is insignificant). The association between drug use and self-rated mental health also becomes weaker when controlling for socio-demographic determinants (however, drug use had no significant association with self-rated mental health when socio-demographic influences are unaccounted for). The association between daily smoking and self-rated mental health becomes weaker and insignificant.

In Model 4, socio-economic determinants were added, along with the socio-demographic determinants. Adding the socio-demographic determinants reveals that long-term immigrants living in Canada between 20 and 29 years have worse self-rated mental health than the newly migrated. Comparing Model 2 to Model 4 indicates that long-term immigrant group 20-29 have

better socio-economic conditions enhancing their mental health. Without the socio-economic benefits, their mental health status is actually worse than the most recent immigrants. Considering the socio-demographic influences, the effect of socio-demographic determinants on self-rated mental health for Filipino immigrants is reduced. It shows that the advantage of coming from the Philippines is partially derived from Filipino immigrants' better socio-economic conditions. However, immigrants coming from the U.S. have worse mental health than British immigrants when socio-economic determinants are held constant.

Immigrants who are currently unmarried, regardless of their previous marital status, has worse self-rated mental health than those currently married. There is some income gradient effect on self-rated mental health. Immigrants who are in upper-middle household income and the highest income range have significantly better mental health than those in the lowest household income range. The effect of education on self-rated mental health is not as strong. Only immigrants with a graduate degree have significantly better self-rated mental health than those without a high school degree. Compared to other groups of workers (or non-workers), immigrants who are permanently unable to work have the poorest self-rated mental. Immigrants who speak either one of the official languages and a foreign language at home have significantly stronger self-rated mental health than those who speak either English or French at home. Immigrants who only speak a foreign language at home do not have any mental health advantages.

In Model 5, the association between behavioral determinants and self-rated mental health is presented accounting for the socio-economic influences. The association exercise and self-rated mental health for respondents who exercise 30 to 60 minutes and >2 hours per episode reduces. The coefficient in the relationship between drug use and self-rated mental health also reduces,

but it is significant compared to Model 1. The association between daily smoking and self-rated mental health becomes stronger, but is no longer significant.

In Model 6, psychosocial, socio-demographic, and socio-economic determinants were added. Long-term immigrant groups 10-19 and 20-29 years still have poorer mental health than the most recent immigrant group when socio-psychological determinants are held constant. Immigrants in the age group of 55 to 64 years old no longer have significantly worse self-rated mental health than young adults aged between 19 and 24. Filipino immigrants also have no mental health advantage when psychosocial resources are held constant, suggesting that this group of immigrants' mental health advantage is related to their stronger psychosocial resources (and to some extent the socio-economic security, as shown in Model 4).

Under the competing influence of psychosocial determinants, the income gradient effect on mental health is reduced. Immigrants with household incomes in the in upper-middle range do not have significantly better mental health than those in the lowest household income range. Immigrants in the highest household income range continue to have a significant mental health advantage over those in the lowest household income range, but the magnitude of the advantage is reduced. This also shows that socio-economic and psychosocial determinants are interrelated, and should not be considered separately, as they have some overlapping influences on mental health.

Model 6 also shows a unique pattern where immigrants living in non-traditional immigrant receiving cities have significantly worse mental health than those living in Toronto, Vancouver, or Montreal. This supports previous studies that found immigrants living outside of first-tier immigrant cities have stronger social support but the support they receive does not gear toward their needs, which could be a reason that their mental health suffers (Chadwick & Collins, 2015).

In Model 7, the effect of behavioral determinants on self-rated mental health is presented accounting for psychosocial determinants. The association between exercise and self-rated mental health becomes consistently weaker. Being a former smoker is significantly associated with worse self-rated mental health, while being a former occasional smoker, former daily smoker, always occasional smoker, and daily smoker have better self-rated mental health (these associations are insignificant though they indicate some patterns), when controlling for psychosocial determinants.

In Model 8, both behavioral and structural determinants were entered into the model. The mental health benefit of exercise is greatly reduced, with only exercising 30 to 60 minutes per week significantly improving mental health compared to no exercise at all. Smoking behaviors have no effect on self-rated mental health when controlling for all types of structural determinants. Interestingly, in Model 1, drug use has no association with mental health, but when other structural determinants are controlled for, its effect on mental health becomes visible.

The effect of gender also becomes visible when considering both behavioral and structural determinants. Female immigrants have worse mental health than their male counterparts, as indicated by previous studies (Thapa & Hauff, 2005). The mental health advantages coming from speaking either one of the official languages and a foreign language dissipates when both behavioral and structural determinants are considered. Using the likelihood ratio test to compare Model 6 and Model 8 shows that Model 8 is significantly better than Model 6 ($p<0.001$)

Table 5.7 The effect of health determinants on self-rated mental health (odds ratio) (CCNHS-MH 2012) (N=4,282)

Model 1=Behavioral determinants only
Model 2=Socio-demographic determinants only
Model 3=Socio-demographic determinants + Behavioral determinants
Model 4=Socio-demographic determinants +Socio-economic determinants
Model 5=Socio-economic determinants +Behavioral determinants
Model 6=Socio-demographic determinants +Socio-economic determinants +Psychosocial determinants
Model 7= Psychosocial determinants + Behavioral determinants
Model 8 = Socio-demographic determinants +Socio-economic determinants+ Psychosocial determinants + Behavioral determinants

Variable	Model 1 Coefficient	Model 2 Coefficient	Model 3 Coefficient	Model 4 Coefficient	Model 5 Coefficient	Model 6 Coefficient	Model 7 Coefficient	Model 8 Coefficient
Body mass index								
Normal	------		-----		-----		-----	------
Underweight	1.385		1.429		1.386		1.555	1.562
Overweight	1.034		1.035		1.036		1.011	1.024
Obese	.802		.830		.874		.796	.922
Exercise levels								
None	------		-----		-----		-----	------
0-15 mins	1.023		.967		1.062		.964	.959
16-30 mins	1.202		1.148		1.213		1.147	1.115
31-60 mins	1.737***		1.763***		1.573***		1.602***	1.525**
61 mins to 2 hrs	1.390*		1.335		1.280		1.359*	1.219
> 2hrs	1.439***		1.338		1.332*		1.367*	1.220
Drinking type								
Non-drinker	-----		-----		-----		-----	------
Occasional drinker	.972		.904		.888		.962	.846
Regular drinker	1.047		.931		.896		1.040	.844
Smoking type								
Non-smoker	-----		-----		-----		-----	------
Former occasional smoker	1.096		1.047		1.088		1.120	1.085
Former daily smoker	.820		.815		.869		.798*	.852
Always occasional smoker	.691		.618		.740		.751	.684
Occasional smoker	1.150		1.058		1.106		1.222	1.115
Daily smoker	.727*		.668		.848		.788	.839
Drug use								
Yes	.821		.754*		.784*		.809	.766*
Migration								
0-9 years		-----	-----	------		------		------
10-19 years		.744*	.753*	.666**		.669**		.676**
20-29 years		.770	.770	.684*		.694*		.703*
30-39 years		.838	.865	.761		.728		.753
40-49 years		.946	.959	.870		.889		.918
50 years and more		.891	.886	.848		.833		.838
Females (Males=0)		.844	.770**	.888		.868		.784*
Age range								
19-24		-----	-----	------		------		------
<18		.846	.718	.927		.961		.821
25-34		1.113	1.155	.938		.955		1.004
35-44		.918	.938	.767		.782		.813
45-54		.771	.773	.677		.702		.707
55-64		.666*	.692	.644*		.664		.682
65 and more		.719	.719	.880		.854		.840
Minority(White=0)		.675	.644	.711		.744		.698
Country of origin								
U.K		-----	-----	------		------		------
North America		.671	.711	.661*		.624*		.652*
South & Central America/Caribbean		1.376	1.383	1.332		1.178		1.207
Other Europe		.957	.982	.909		.850		.868

Germany		1.000	1.007	.878		.907		.919
Netherlands		.732	.724	.725		.766		.759
Italy		.868	.877	.904		.789		.786
Africa		1.844	1.716	1.701		1.472		1.381
China/Hong Kong/Taiwan		1.025	.962	.937		1.045		.998
Philippines		2.222*	2.270*	1.971*		1.860		1.903
India		1.634	1.451	1.463		1.317		1.210
Other Asia		1.152	1.068	1.081		1.151		1.076
Oceania		.902	.916	.794		.727		.732
Household type								
Married couple				------	-------	------		------
Couples with children				1.130	1.032	1.122		1.077
Single/widowed/separated/divorced				.735**	.767**	.798*		.801*
Extended family				1.105	1.082	1.017		1.019
Female lone parent				1.223	1.124	1.337		1.333
Other types				1.052	.927	1.004		.990
Income level								
Lowest				------	------	------		------
Lower-middle				1.223	1.183	1.222		1.213
Upper-middle				1.380*	1.282*	1.248		1.235
Highest				1.722***	1.530**	1.522**		1.497**
Education								
Less than high school				------	------	------		------
High school				1.337	1.269	1.381		1.334
Some post-sec.				1.158	1.242	1.247		1.271
Trade certificate				1.322	1.326	1.436		1.389
College/university certificate				1.387	1.423*	1.457		1.417
Bachelor's degree				1.157	1.176	1.201		1.170
Higher than bachelor's degree				1.793**	1.836***	1.698*		1.573*
Work status								
Currently working				------	------	------		------
Not working				.809	.886	.696		.754
Permanently unable to work				.089***	.095***	.106***		.121***
Retired or above working age				.638	.714	.513*		.559*
Working conditions								
Full-time				------	------	------		------
Part-time				.856	.857	.819		.848
School/Household/Retirement				1.132	1.064	1.205		1.099
Linguistic minority								
English or French				------	------	------		------
English, French, and Other				1.273*	1.154	1.299*		1.238
Other languages only				1.097	.979	1.040		1.010
Place of residence								
1st-tier immigrant receiving city				------	-----	------		------
2rd-tier immigrant receiving city				.849	.933	.884		.869
Other cities				.828	.893	.797*		.783*
Social support						3.220***	3.643***	3.227***
Interpersonal strain						.714***	.776***	.730***
Cut1	-2.602***	-3.246***	-3.343***	-3.036***	-2.467***	3.253***	4.540***	3.061***
Cut2	-.647***	-1.282***	-1.353***	-.975**	-.421	5.416***	6.600***	5.242***
Cut3	.969***	.349	.310	.710*	1.241***	7.200***	8.322***	7.045***

p<0.05* p<0.01** p<0.001***
Cut 1=Poor to fair versus good very good excellent
Cut 2=Poor to fair good /very good excellent
Cut 3= Poor to fair good very good /excellent

Chapter 6 Stress Proliferation in the Context of Migration

In Chapter 5, I identified psychosocial resources and demands as the major social determinants undermining immigrants' mental health. Guided by the Stress Process Model., the first goal of this chapter is to determine if exposure to interpersonal strain or accumulation of social support are differential across immigrant groups based on length of migration, and whether or not the differential exposure or accumulation can account for mental health differences between recent and long-term immigrants.

In Chapter 2, I hypothesized that long-term Canadian immigrants have better social support than their recent counterparts, but the former also experience more interpersonal strain than the latter. Results of these hypotheses are discussed in 6.1 In Chapter 2, I also hypothesized that interpersonal strain would be a mediator joining the effect of years of migration to influence psychological outcomes, including psychological distress, positive mental health, and self-rated mental health. Alternatively, I hypothesized that social support should be suppressor that reduces the effect of migration on psychological outcomes. I also hypothesized that social support would buffer the effect of interpersonal strain on psychological outcomes. Finally, I hypothesized that the effect of interpersonal strain on psychological outcomes is stronger than that of social support. Tests of these hypotheses are discussed in 6.2 in three sets of models, including models of psychological distress, positive mental health, and self-rated mental health.

The second goal of this chapter is to determine if, compared to migration in adulthood, childhood migration is associated with more behavioral risks or psychosocial challenges. Immigrant youth might have good mental health upon arrival, but this pattern is transient. Extant research indicates that migration in childhood or adolescence is associated with poorer mental health in adulthood (Gong et al., 20011; Veling et al., 2011). This finding is perplexing, as

migration in childhood is beneficial to adult attainments, including stronger economic outcomes and education levels (Beck et al., 2012), which improve access to health services and enhance health-promoting behaviors. However, research using life course perspectives suggests that childhood is a vulnerable period, where age-salient developmental tasks require immigrant children to identify with their peers, who are oftentimes not from the same ethnic backgrounds and linguistic groups.

In light of these contradictory patterns of integration, my study investigates risk and protective factors associated with migration in childhood. After risk and protective factors are identified, I examine whether these factors operate as pathways to higher psychological distress in adulthood. These results are found in Section 6.3

6.1 Social support as psychological resources and interpersonal strain as psychological demands

In Table 6.1, the association between years of migration and social support, as well as the association between years of migration and interpersonal strain, is presented with control variables. If years of migration has a significant association to social support or interpersonal strain, this means that social support and interpersonal strain can potentially operate as pathways to immigrants' mental health deterioration.

Table 6.1 shows that compared to the newly migrated—and with the exception of those living in Canada 10-19 years—all long-term immigrant groups have stronger social support than the most recent immigrants. Years of migration and social support do not follow a linear relationship, since instead of those living in Canada for 50 years or more (and thus possessing the strongest migration history), immigrant group 30-39 years has the strongest social support compared to other immigrant groups. Young adult immigrants aged between 19 and 24 years old

have a social support advantage over other age groups, except for those under 18 years old[18]. There is some income gradient effect on social support, as higher household incomes (upper-middle and highest) are associated with stronger social support. The education gradient effect on social support is not apparent, as only immigrants possessing a graduate degree are protected by significantly higher support compared to those without a graduate degree.

Being unmarried, regardless of being single, widowed, separated or divorced, and a female lone parent are associated with lower social support compared to the married. Being female is associated with higher social support than being a male. Lastly, being a minority, coming from China, Hong Kong, and Taiwan, and other Asian countries are disadvantageous when it comes to social support.

The second column of Table 6.1 shows the association between years of migration and interpersonal strain when controlling for other demographic and socio-economic variables. Compared to the newly migrated, long-term immigrants experience more interpersonal strain. Immigrant group 10-19 years might be the most disadvantaged group, in that they have greater exposure to interpersonal strain and no stronger social support than the newly migrated.

Being a female is associated with experiencing higher interpersonal strain (though women are also better supported than men). This is unsurprising, since women are more involved in tasks requiring the provision of care or emotional labor (Di Leonardo, 1987; DeVault, 1991; Hoschild, 1983). Age also has a negative relationship with interpersonal strain, suggesting that young immigrants are more likely to experience interpersonal strain than their older counterparts. Immigrants who are currently not working or retired experiences less interpersonal strain compared to those currently working. Having a trade certificate and a bachelor's degree is

[18] Without controls, all age groups have similar levels of social support.

associated with higher interpersonal strain compared to having not completed high school. Being a single, separated, divorced, or widowed person is associated with less interpersonal strain compared to being married. This is expected since married immigrants report experiencing marital strain due to different acculturation paces and changing gender roles (Ben-David & Lavee, 1994; Flores et al., 2004; Hymen, Guruge, & Mason, 2008).

Not speaking English or French at home is also associated with less interpersonal strain. British immigrants experience significantly more interpersonal strain than immigrants from other countries such as China, Hong Kong, Taiwan, India, Italy, other Europe, South or Central America, and the Caribbean.

Table 6.1 Social support and interpersonal strain as positive and negative psychosocial resources (CCHS-MH 2012) (N=4,282)

Variable	Social support Coefficient	Interpersonal strain Coefficient
Migration		
0-9 years	-----	-----
10-19 years	.032	.199**
20-29 years	.070*	.313***
30-39 years	.112**	.285***
40-49 years	.083*	.303***
50 years and more	.089*	.317**
Females (Males=0)	.060***	.113**
Age range		
19-24	-----	-----
<18	-.068	.011
25-34	-.116***	-.275**
35-44	-.146***	-.323***
45-54'	-.186***	-.449***
55-64	-.219***	-.571***
Above 65	-.186***	-.737***
Household type		
Married couples alone	------	-----
Married couples with children	.029	.053
Single/widowed/separated/divorced	-.127***	-.111**
Extended family	.055	-.164
Female lone parent	-.078*	-.046
Other types	.002	-.046
Income level		
Lowest	-----	-----
Lower-middle	.005	-.040
Upper-middle	.083***	-.075
Highest	.132***	.019
Education		
Less than high school	-----	-----
High school	-.030	.037
Some post-secondary	-.056	.082
Trade certificate	-.006	.215**
College/university certificate	.021	.157
Bachelor's degree	.039	.185*
Above bachelor's degree	.105**	.155
Work status-1		
Currently working	-----	-----
Not working	.080	-.219*
Permanently unable to work	-.226*	.076
Retired or above working age	.086	-.355**
Work status-2		
Full-time	------	-----
Part-time	.008	-.072
Housework/school/retired	-.083	.012
Minority (Whites=0)	-.070*	-.048
Linguistic minority		
English or French	-----	------
English or French, & other	.011	.007
Others only	-.005	-.271***
Country of origin		
U.K	------	------
U.S.	.047	.022
South & Central America, Caribbean	.044	-.266**
Other Europe	-.029	-.265***
Germany	-.006	-.093
Netherlands	-.100	-.070
Italy	.005	-.396***
Africa	.067	-.200
China, Hong Kong, & Taiwan	-.171***	-.269*
Philippines	.021	-.158
India	.015	-.297**

Other Asia	-.082*	-.178
Oceania	-.000	-.269
Place of residence		
First-tier immigrant receiving city	------	------
Second-tier immigrant receiving city	-.001	.092
Other cities	.027	.001
Constant	6.006***	1.736***
Adjusted R^2	12.931%	15.134%

p<0.05* p<0.01** p<0.001***

6.2 Pathways to mental health deterioration: the effect of psychological resources and demands in the stress process

In the following sections, three sets of multiple regression models will be discussed, including psychological distress, positive mental health, and self-rated mental health. Each model investigated whether or not social support acted as a suppressor and interpersonal strain as a mediator. Additionally, an interaction term of interpersonal strain and social support was entered to test if the term was significant.

6.2.1 *Multiple regression analysis on psychological distress*

Table 6.2 presents a series of multiple regression models in a hierarchical fashion. Model 1 shows the focal association between years of migration and psychological distress. Without any other control variables, long-term immigrants 30-39 and 40-49 years experience less psychological distress than the most recent immigrants.

Model 2 examines if the focal association between years of migration and psychological distress observed in Model 1 persists after introducing socio-demographic and socio-economic control variables. Model 2 indicates that two groups of long-term Canadian immigrants (10-19 years and 20-29 years) are more distressed than their recently-migrated counterparts. The R^2 of Model 2 is around 10%, which is 9% larger than that of Model 1. This indicates that years of migration itself has minimal role in explaining psychological distress. Rather, it is immigrants'

socio-demographic and socio-economic conditions that play the more defining role in shaping psychological distress.

When social support was added in Model 3, the R^2 increased to 17.44%. The association between social support and psychological distress is negative, meaning that immigrants with more social support are less distressed. Social support in the context of migration operates as a suppressor in the relationship between years of migration and psychological distress. In previous sections testing the association between years of migration and social support, Table 6.1 shows that long-term Canadian immigrants have stronger social support than the most recent ones, suggesting that the social support accumulated by long-term Canadian immigrants reduces psychological distress to some degree, though it might not fully eliminate the negative effects of migration on psychological distress. This finding is not entirely unique. Other studies have found that when social support or social contacts are introduced into the model, the association between length of residence in Canada and negative psychological outcomes is enhanced (Wu & Schimmele, 2005).

Comparing Model 2 to Model 3, we see that the focal association between years of migration and psychological distress becomes stronger in both magnitude and strength. Table 6.1 shows that the social support enjoyed by long-term Canadian immigrants is significantly stronger than that experienced by the most recent immigrants. As a result, when the advantages of long-term immigrants' social support system are taken into consideration, their distress levels are in fact higher. For example, long-term immigrants living in Canada for 20 to 29 years are more distressed in Model 3 than in Model 2, when their stronger social support is held constant, indicating that social support operates as a suppressor.

Despite long-term immigrants' advantages in social support, they are disadvantaged when it comes to interpersonal strain. In previous sections on the association between years of migration and interpersonal strain, Table 6.1 shows that long-term Canadian immigrants experience or perceive more interpersonal strain than their most recently migrated counterparts. This result supports previous findings that long-term immigrants perceive more discrimination and experience more intergenerational conflicts, marital strain, and intimate violence (Darvishpour, 2002; Finch, Frank, & Hummer, 2000; Hymen, Forte, Du Mont, Romans, & Cohen, 2006; Min, 2001).

When interpersonal strain was added into Model 4, the focal association between years of migration and psychological distress disappeared, and the R^2 increased to 21.48%. Interpersonal strain has a positive association with psychological distress. However, years of migration does not have any direct effects on psychological distress when interpersonal strain was added into the equation. The effect of years of migration was channeled through the mediator, interpersonal strain, indicating a full mediation effect. This indicates that length of migration is not a true risk factor for mental health deterioration. The true risk is in the increase of interpersonal strain resulting from the settlement process. The results of Model 4 suggest that interpersonal strain operates as a mediator in the relationship between years of migration and psychological distress.

In Model 5, an interaction term of interpersonal strain and social support was entered into the equation. The results show that when facing interpersonal strain, social support acts as a buffer (effect modifiers) reducing the negative effects of interpersonal strain on psychological distress. The result supports the hypothesis that social support can reduce the effects of interpersonal strain on psychological distress.

In Model 6, years of migration, socio-demographic and socio-economic variables, social support, and interpersonal strain were entered into the model. The coefficients of social support and interpersonal strain were standardized to show their comparative effect on psychological distress (coefficients in brackets). The standardized coefficients reveal that interpersonal strain has a more deleterious effect on psychological distress than the beneficial effect of social support. In this full model, the pattern of gender and age effects on psychological distress remain similar to those of previous models (from Model 2 to Model 5). Being permanently unable to work, or a part-time worker continue to have positive and significant associations with psychological distress. However, in the full model, immigrants above working age or retired become significantly more distressed than current workers (this group is not significantly more distressed than current workers in any of the previous models).

Having some post-secondary education is still also the only category that is significantly more distressed than having no high school degree. Speaking an official language (English or French) and another language at home is associated with less psychological distress. Speaking only non-official languages at home has no mental health advantages over speaking official languages. In the last model, it shows that immigrants from the U.S., Germany, and Italy are significantly more distressed than those from the U.K. The higher distress level for Italian immigrants only begins to appear when the factor of interpersonal strain is taken into consideration. The second most distressed group is German immigrants. German immigrants appear to be more distressed than British immigrants when controlling for socio-demographic and socio-economic conditions. The gap between the two groups closes slightly after social support enters into the model, but the gap widens again after adding the factor of interpersonal strain. American immigrants are the third most distressed group. The gap between American and

British immigrants is wider when controlling for socio-demographic and socio-economic conditions, but the gap closes slightly once social support and interpersonal conflicts are added.

Table 6.2 The effect of demographic variables, social support, and interpersonal strain on Canadian immigrants' psychological distress (CCHS-MN 2012) (N=4282) (unstandardized coefficients/standardized coefficients in brackets)

Variable	Model 1 (focal) Coef.	Model 2 (controls) Coef.	Model 3 (social support) Coef.	Model 4 (interpersonal strain) Coef.	Model 5 (Interaction) Coef.	Model 5 (full) Coef.
Migration						
0-9 years	-----	------	------	------	-----	-----
10-19 years	.08	.170*	.199**	.069	.103	.104
20-29 years	-.00	.185*	.250**	.027	.099	.097
30-39 years	-.20*	.022	.125	-.123	-.009	-.022
40-49 years	-.21**	.081	.158	-.072	.009	.007
50 years and more	-.15	.093	.176	-.068	.022	.018
Females (Males=0)		.192***	.248***	.134**	.190***	.187***
Age range						
19-24		------	------	------	-----	-----
<18		.176	.113	.171	.120	.119
25-34		-.261*	-.368***	-.122	-.230**	-.225*
35-44		-.386***	-.520***	-.222*	-.363***	-.351***
45-54		-.520***	-.692***	-.292**	-.464***	-.459***
55-64		-.599***	-.801***	-.309**	-.519***	-.507***
65 & more		-.828***	-1.000***	-.455***	-.649***	-.636***
Household type						
Married couples		------	------	-----	-----	-----
Married couples with children		.029	.055	.002	.024	.026
Single/divorced/widowed		.130*	.013	.186***	.086	.083
Extended family		-.117	-.066	-.034	-.007	.000
Female lone parent		.050	-.022	.073	.019	.011
Other types		-.047	-.046	-.024	-.024	-.025
Income level						
Lowest		------	-----	-----	------	-----
Lower-middle		.095	.100	.116	.114	.118
Upper-middle		-.010	.066	.028	.093	.088
Highest		-.082	.040	-.092	.016	.011
Education						
Less than high school		------	-----	-----	-----	-----
High school		.124	.097	.105	.098	.084
Some post-secondary		.316*	.264*	.274*	.244*	.235*
Trade certificate		.097	.092	-.012	-.003	-.005
College/university certificate		.099	.119	.020	.049	.044
Bachelor's degree		.160	.195*	.066	.112	.106
Above bachelor's degree		.151	.249**	.073	.169	.162
Work status						
Currently working		------	-----	-----	-----	-----
Not working		.068	.142	.179	.214	.229
Permanently unable to work		1.476***	1.268***	1.438***	1.253***	1.268***
Retired or above working age		.087	.166	.266	.295	.314*
Work condition						
Full-time		------	------	------	------	-----
Part-time		.230*	.238**	.266**	.269**	.269**
School/Household/Retired		-.037	-.113	-.043	-.106	-.106
Minority (Whites=0)		.009	-.056	.033	-.023	-.023
Linguistic minority						
English/French		------	------	------	------	------
English/French/Other		-.167*	-.157*	-.170*	-.162**	-.151*
Other only		-.240**	-.245***	-.103	-.118	-.121
Country of origin						
U.K		------	------	------	------	------
North America		.223	.266*	.212*	.243*	.249*
S.A./C.A./Caribbean		-.018	.022	.116	.127	.137
Other Europe		.055	.028	.189*	.143	.153
Germany		.385*	.379*	.433*	.423*	.423*
Netherlands		.279	.186	.314*	.222	.233
Italy		.225	.230	.426***	.391**	.409***
Africa		.055	.117	.156	.175	.197

China, Hong Kong, & Taiwan		-.077	-.235	.060	-.075	-.086
Philippines		-.018	.001	.062	.077	.070
India		-.086	-.073	.064	.047	.060
Other Asia		.156	.081	.247	.168	.174
Oceania		.263	.263	.400	.390	.385
Place of residence						
1st-tier immigrant city		------	-----	------	-----	------
2rd-tier immigrant city		.110	.109	.064	.066	.067
Other cities		-.009	.016	-.009	.010	.012
Social support			-.923***		-.534***	-.769(-.249)***
Interpersonal strain				.507***	1.527***	. 455(.336)***
Strain x Support					-.182**	
Constant	1.77***	1.857***	7.394***	.977***	4.304***	5.681***
Adjusted R^2	0.77%	9.632%	17.441%	21.479%	27.099%	26.792%

p<0.05* p<0.01** p<0.001***

6.2.2 *Multiple regression analysis on positive mental health*

Table 6.3 presents the change in coefficients of the focal association between years of migration and positive mental health before and after socio-demographic, socio-economic, and social-psychological controls. The model was created in a hierarchical fashion.

Model 1 shows the focal association between years of migration and positive mental health. Without any other controls, immigrants living in Canada for 10 to 19 years have less positive mental health than the most recent immigrants, but no other long-term immigrant groups.

Model 2 shows the change in coefficients of the focal association between years of migration and positive mental health with socio-demographic and socio-economic control variables. The R^2 for this model is 8.461%. Long-term immigrants living in Canada for 10 to 19 years still comprise the only group having worse positive mental health than their most recently-migrated counterparts, and the gap between the two groups increases when holding socio-demographic and socio-economic factors constant. In this model, senior immigrants are the only age group showing significantly stronger positive mental health than the reference group (19-24 years old). Being single, divorced, separated, and widowed is associated with less positive mental health, whereas living with extended family enhances it.

There is no income and education gradient effect on positive mental health in Model 2. Being permanently unable to work is the only work status associated with less positive mental health. Being employed full-time or part-time, or unemployed does not affect positive mental health. Speaking an official language, English or French, along with another language at home is associated with positive mental health; however, speaking a non-official language at home is not associated with positive mental health. The mental health advantage is attached to speaking an official language and another foreign language. Immigrants from Germany, China, Hong Kong, and Taiwan have significantly less positive mental health than British immigrants.

Model 3 examines the change in coefficients of the focal association with social support being held constant. The focal association becomes strong for the immigrant group living in Canada for 10 to 19 years and 20 to 29 years. The inclusion of social support did not significantly affect the association between years of migration and positive mental health for other immigrant groups. In Table 6.1, we learned that all long-term immigrant groups have significantly stronger social support than the most recent immigrants, except for those only in Canada for 10 to 19 years (but this group still enjoys stronger social support [coefficient=0.32 in Table 6.1] than the reference group). The growth of social support awarded to long-term immigrants living Canada for 20 to 29 years suppresses the focal association between years of migration and positive mental health, making the coefficient in the focal association in Model 2 more significant compared the coefficient in Model 1. There is also some suppression effect for immigrants living in Canada for 10 to 19 years, but since the coefficient 0.32 is not significant, we cannot be sure that the suppression is not due to random chance.

Other than social support's indirect effects on positive mental health, social support has a strong independent effect on Canadian immigrants' positive mental health. The R^2 increased to

23.62% when social support entered into the equation. The unique contribution of social support to positive mental health is 15.15%. Another importance of adding social support into the model is to show the major benefit of marriage and extended households for immigrants. When social support is held constant, marriage and larger family as family structures no longer have independent effects on positive mental health. The benefit of being of middle or older age, however, becomes clear upon considering social support. Surprisingly, immigrants of the upper-middle household income bracket do not enjoy better mental health than those in the lowest household income bracket. Other higher household income groups have negative associations with positive mental health, though they are not significant. When disadvantages in social support (shown in Table 6.1) are held constant (as though immigrants of all nationalities have equal footing in social support), immigrants from China, Taiwan, and Hong Kong no longer experience less positive mental health compared to British immigrants. This confirms that for immigrants from China, Taiwan, and Hong Kong, social support is the major reason that their positive mental health is adversely affected.

When interpersonal strain was included in Model 4, the R^2 increased to 14.83%. For immigrants residing in Canada for 10-19 years, the direct effect of years of migration on positive mental health disappeared, thus indicating that the decrease in positive mental health for this specific group results from an increased exposure to, or perception of, interpersonal strain. (As previously shown, Table 6.1 indicates that this specific immigrant group encounters more interpersonal strain than the most recent immigrant group). This indicates that interpersonal strain acts as a mediator in the relationship between years of migration and positive mental health for this specific group. However, for other immigrant groups, there is no mediation effect of interpersonal strain, since the focal association between years of migration and positive mental

health does not exist in the first place. Model 4 also shows that unmarried immigrants appear to have less positive mental health when interpersonal strain is held constant (when their advantage in experiencing less interpersonal strain is taken away). In Table 6.1, we learned that unmarried immigrants are less supported, but they also have the advantage of less exposure to unwanted interpersonal conflicts. They might have overall less intense social interactions with others, which is why they experience lower social support and interpersonal strain.

Comparing Model 2 and Model 4, Immigrants from Other Europe and Italy experience significantly less positive mental health than British immigrants after interpersonal strain is held constant. Table 6.1 shows that these groups experience significantly less interpersonal strain than British immigrants. For immigrants from Germany, China, Hong Kong, and Taiwan, the initially significant association between nationality and positive mental health in Model 2 becomes stronger. For immigrants from China, Hong Kong, and Taiwan, they also experience significantly less interpersonal strain than their British counterparts. German immigrants also experience less interpersonal strain than British immigrants, but the comparison is not statistically significant.

In Model 5, the interaction term between interpersonal strain and social support was entered into the equation and the overall effect of years of migration on positive mental health did not change. Similar to the buffering effect of social support on psychological distress, social support also buffers the negative effect of interpersonal strain on positive mental health. The hypothesis that social support buffers the negative effect of interpersonal strain on positive mental health is thus supported.

In Model 6, all control variables, social support and interpersonal strain were entered into the model. The coefficients of social support and interpersonal strain were standardized to show

the comparative effect on positive mental health. The standardized coefficient shows that social support has a stronger beneficial effect on positive mental health than the deleterious effect of interpersonal strain. The R^2 in Model 3 and Model 4 are 23.62% and 14.83% respectively, indicating that social support has more explanatory power in Canadian immigrants' positive mental health than interpersonal strain. However, in the case of psychological distress, the influence of social support and interpersonal strain are reversed. This finding shows that negative affect has a greater effect on negative psychological outcomes, while positive affect has a greater effect on positive psychological outcomes.

Table 6.3 The effects of demographic variables, social support, and interpersonal strain on Canadian immigrants' positive mental health (N=4282) (unstandardized coefficients/standardized coefficients in brackets)

Variable	Model 1 (focal IV) Coef.	Model 2 (controls) Coef.	Model 3 (social support) Coef.	Model 4 (interpersonal strain) Coef.	Model 5 (Interaction) Coef.	Model 6 (final model) Coef.
Migration						
0-9 years	------	-----	-----	-----	-----	-----
10-19 years	-1.67*	-1.779*	-2.132***	-1.147	-1.594**	-1.608**
20-29 years	-.40	-.643	-1.410*	.352	-.591	-.569
30-39 years	.92	.792	-.445	1.699	.219	.363
40-49 years	.83	.945	.031	1.908	.838	.858
50 years and more	-.76	.205	-.780	1.215	.040	.089
Females (Males=0)		.163	-.501	.524	-.201	-.166
Age range						
19-24		-----	-----	-----	-----	-----
<18		-1.874	-1.125	-1.841	-1.172	-1.156
25-34		-.597	.683	-1.471	-.051	-1.103
35-44		.758	2.362**	-270	1.570*	1.432
45-54		1.675	3.721***	.247	2.498**	2.442**
55-64		.988	3.404***	-.829	1.912	1.792
65 & more		2.476*	4.520***	.131	2.663*	2.522*
Household type						
Married couples		-----	-----	-----	-----	-----
Married couples with children		.582	.268	.750	.453	.424
Single/divorced/widowed		-1.952***	-.549	-2.303***	-.973	-.933
Extended family		2.113*	1.503	1.592	1.216	1.140
Female lone parent		.048	.905	-.100	.636	.723
Other types		-1.759	-1.777	-1.904	-1.899	-1.890
Income level						
Lowest		-----	-----	-----	-----	-----
Lower-middle		.003	-.056	-.125	-.116	-.152
Upper-middle		-1.029	-1.938**	-1.269*	-2.113***	-2.057***
Highest		.283	-1.172	.344	-1.066	-1.013
Education						
Less than high school		-----	-----	-----	-----	-----
High school		-.143	.183	-.026	.105	.250
Some post-secondary		-.793	-.172	-.531	-.109	-.014
Trade certificate		.572	.638	1.255	1.140	1.169
College/university certificate		-.290	-.521	.209	-.171	-.110
Bachelor's degree		.594	.167	1.181	.591	.660
Above bachelor's degree		.593	-.567	1.086	-.174	-.090
Work status						
Currently working		-----	-----	-----	-----	-----
Not working		-1.205	-2.086	-1.905	-2.398*	-2.565*
Permanently unable to work		-11.376***	-8.888***	-11.134***	-8.727**	-8.889**
Retired or above working age		-1.378	-2.335	-2.515	-2.941*	-3.149*
Work condition						
Full-time		-----	-----	-----	-----	-----
Part-time		-.976	-1.066	-1.204	-1.104	-1.238
School/Household/Retired		.646	1.555	.685	1.436	1.516
Minority (Whites=0)		.027	.797	-.127	.692	.618
Linguistic minority						
English/French		------	-------	-----	-----	-----
English/French/Other		1.536*	1.412**	1.558**	1.449**	1.439**
Other only		.976	1.032	.113	.317	.350
Country of origin						
U.K		------	-----	------	-----	-----
North America		-.512	-1.028	-.444	-.864	-.932
S.A./C.A./Caribbean		.445	-.040	-.400	-.561	-.667
Other Europe		-1.635	-1.313	-2.476**	-1.899*	-1.999*
Germany		-3.313*	-3.241*	-3.609**	-3.479*	-3.481*
Netherlands		-2.132	-1.025	-2.355	-1.167	-1.286
Italy		-2.309	-2.363	-3.569**	-3.154**	-3.348**
Africa		.768	.032	.132	-.167	-.410
China, Hong Kong, & Taiwan		-3.243*	-1.358	-4.098**	-2.290	-2.174

Philippines		2.520	2.291	2.014	1.831	1.911
India		1.793	1.628	.849	1.049	.899
Other Asia		-1.890	-.995	-2.465	-1.442	-1.509
Oceania		-2.322	-2.318	-3.177	-3.037	-2.989
Place of residence						
1st-tier immigrant city		------	------	------	-----	-----
2rd-tier immigrant city		-.651	-.638	-.360	-.392	-.409
Other cities		.222	-.072	.224	-.028	-.048
Social support			11.011***		7.597***	10.166(.388)***
Interpersonal strain				-3.180***	-14.205***	-2.498(.215)***
Strain x Support					1.992**	
Constant	55.51***	54.495***	-11.068**	60.476***	13.366	-1.667
Adjusted R^2	0.75%	8.461%	23.615%[19]	14.832%	27.977%	27.455%

p<0.05* p<0.01** p<0.001***

6.2.3 *Ordinal logistic analysis on self-rated mental health*

Table 6.4 presents a series of nested ordered logistic regression models. Model 1 shows the focal association between years of migration and self-rated mental health. Without socio-demographic and socio-economic controls, all groups of long-term immigrants experience significantly worse mental health than the most recent immigrants.

Model 2 shows the change of focal association when controlling for socio-demographic and socio-economic variables. In Model 2, long-term immigrants 10-19 years and 20-29 years have significantly worse self-rated mental health than the most recent immigrant group. The age group 55-64 experiences significantly lower self-rated mental health than the reference age group (19-24 years old). The other age groups also experience worse mental health than the reference age group, but the difference is insignificant. Being single, divorced, separated, or widowed is significantly associated with poorer mental health, compared to being married.

There is some income gradient effect on self-rated mental health, as the upper-middle and highest household income brackets are associated with stronger mental health than the lowest household income bracket. The effect of education on self-rated mental health is not as obvious, as only immigrants with a graduate degree enjoy significantly better mental health than those not

finishing high school. Being permanently unable to work is the only job status associated with worse mental health. Work conditions are not associated with self-rated mental health.

Speaking one of the two official languages and a third language at home is associated with better mental health. Immigrants from the U.S. experience significantly worse self-rated mental health, whereas those from the Philippines experience the opposite.

Model 3 shows the change in focal association between years of migration and self-rated mental health after socio-demographic, socio-economic controls, and social support. The healthy immigrant effect for mental health is the most visible when controlling for social support. In Model 3, three groups of long-term immigrants experience significantly worse mental health than the most recent immigrant group.

Social support functions as a suppressor masking the focal relationship between years of migration and self-rated mental health, similar to that of years of migration and psychological distress. Simply put, long-term immigrants' self-rated mental health could be if not for their better social support. The hypothesis that social support acts as a suppressor between years of migration and self-rated mental health is supported; however, the mediating hypothesis of social support is not supported. The direct effect of social support on self-rated mental health still holds. For example, immigrants are 3.49 times more likely to report having better mental health with each unit increase in social support

The inclusion of social support makes reduces the effect of income and education effect on mental health. In Model 4, only the highest household income group is significantly associated with better mental health, while immigrants with a graduate degree no longer enjoys a mental health advantage.

When interpersonal strain was entered in Model 4, the focal association between years of migration and self-rated mental health loses significance for all immigrant groups except for immigrant group 10-19 years. Comparing Model 4 against Model 2, the inclusion of interpersonal strain reduces the magnitude of the focal association between years of migration and self-rated mental health. The mental health gap between long-term immigrants and recent immigrants is reduced. Long-term immigrant group 10-19 years still experiences significantly less mental health than the most recent immigrant group, with the gap closing after controlling for interpersonal strain. The other long-term immigrant group 20-29 years no longer experiences significantly poorer mental health. Interpersonal strain has both direct and indirect effects on self-rated mental health. The hypothesis that interpersonal strain operates as a mediator between years of migration and self-rated mental health is thus supported; however, social support does not buffer the negative effect of interpersonal strain on self-rated mental health. The interaction term of interpersonal strain and social support was insignificant (not shown in the table). The hypothesis that social support modifies the relationship between interpersonal strain and self-rated mental health is unsupported.

Table 6.4 shows that the healthy immigrant effect for mental health is most visible when demographic variables are not controlled for (Model 1). However, socio-demographic and socio-economic variables explain away most of the significant effect of years of migration on self-rated mental health (Model 2). Only long-term immigrants living in Canada for 10 to 19 years continue to have worse self-rated mental health than the most recent immigrants. Adding social support to the equation brings back the healthy immigrant effect for long-term immigrant groups living in Canada for 20 to 29 years and 30 to 39 years, but not for those living in Canada for 40 to 49 years and 50 years and above. Including interpersonal strain in the equation, however, does

not have any effect on the long-term immigrant groups other than those living in Canada for 10 to 19 years.

Table 6.4 The effects of demographic variables, social support, and interpersonal strain on Canadian immigrants' self-rated mental health (CCHS-MS 2012) (N=4,282)

Variable	Model 1 (focal IV) Odds ratio	Model 2 (controls) Odds ratio	Model 3 (social support) Odds ratio	Model 4 (interpersonal strain) Odds ratio	Model 5 (final model) Odds ratio
Migration					
0-9 years	-----	-----	-----	-----	------
10-19 years	.641***	.666**	.633***	.706*	.669**
20-29 years	.643**	.684*	.620**	.771	.694*
30-39 years	.623***	.761	.658*	.847	.728
40-49 years	.690**	.870	.789	.985	.889
50 years and more	.603***	.848	.747	.945	.833
Females (Males=0)		.888	.834	.925	.868
Age range					
19-24		-----	-----	-----	-----
<18		.927	.969	.923	.961
25-34		.938	1.073	.832	.955
35-44		.767	.897	.665*	.782
45-54		.677	.839	.562**	.702
55-64		.644*	.838	.504***	.664
65 & more		.880	1.127	.656	.854
Household type					
Married couples		-----	-----	-----	-----
Couples with children		1.130	1.097	1.156	1.122
Single/divorced/widowed		.735**	.842	.699***	.798*
Extended family		1.105	1.053	1.060	1.017
Female lone parent		1.223	1.358	1.208	1.337
Other types		1.052	1.024	1.021	1.004
Income level					
Lowest		-----	-----	-----	-----
Lower-middle		1.223	1.234	1.211	1.222
Upper-middle		1.380*	1.266	1.349*	1.248
Highest		1.72***	1.477*	1.761***	1.552**
Education					
Less than high school		-----	-----	-----	-----
High school		1.337	1.363	1.358	1.381
Some post-secondary		1.156	1.211	1.203	1.247
Trade certificate		1.322	1.315	1.457	1.436
College/university certificate		1.387	1.358	1.495*	1.451
Bachelor's degree		1.157	1.109	1.264	1.201
Above bachelor's degree		1.793**	1.570	1.937**	1.698*
Work status					
Currently working		-----	-----	-----	-----
Not working		.809	.740	.744	.696
Permanently unable to work		.089***	.108***	.089***	.106***
Retired/above working age		.638	.571	.557	.513*
Work condition					
Full-time		-----	-----	-----	-----
Part-time		.860	.836	.838	.819
School/Household/Retired		1.132	1.218	1.131	1.204
Minority (Whites=0)		.711	.766	.690	.744
Linguistic minority					
English/French		-----	-----	-----	-----
English/French/Other		1.273*	1.290*	1.290*	1.300*
Other only		1.097	1.135	.994	1.040
Country of origin					
U.K		-----	-----	-----	-----
North America		.662*	.621*	.662*	.624*
S.A./C.A./Caribbean		1.333	1.264	1.212	1.178
Other Europe		.909	.927	.819	.850

Germany		.878	.927	.861	.907
Netherlands		.725	.784	.707	.766
Italy		.904	.887	.791	.789
Africa		1.701	1.559	1.576	1.472
China, Hong Kong, &		.937	1.151	.849	1.045
Taiwan		1.971*	1.923	1.886	1.860
Philippines		1.463	1.427	1.326	1.317
India		1.081	1.207	1.025	1.151
Other Asia		.794	.776	.736	.727
Oceania					
Place of residence		-----	-----	-----	-----
1st-tier immigrant city		.849	.850	.887	.884
2rd-tier immigrant city		.828	.789*	.834	.797*
Other cities			3.494***		3.220***
Social support				.676***	.714***
Interpersonal strain					
Strain x Support					
Cut1	-3.063	-3.036***	4.352***	-3.750***	3.253***
Cut2	-1.121*	-.975**	6.485***	-1.653***	5.416***
Cut3	.481*	.710*	8.244***	.064	7.199***

p<0.05* p<0.01** p<0.001***
Cut 1=Poor to fair versus good very good excellent
Cut 2=Poor to fair good /very good excellent
Cut 3= Poor to fair good very good /excellent

6.2.4 Model summary

In sum, there is some evidence to suggest that the healthy immigrant effect exists when it comes to psychological distress among Canadian immigrant populations, but this effect is fully mediated by the presence of interpersonal strain. Social support has a direct effect on psychological distress for all immigrant cohorts, but its indirect effect applies only to immigrants living in Canada for 20 to 29 years. For this group of immigrants, social support suppresses the focal relationship between years of migration and psychological distress, indicating that immigrants' distress levels would have been significantly higher were it not for the presence of their social support networks.

The healthy immigrant effect for positive mental health is less visible, as it is the case for psychological distress. With socio-demographic and socio-economic controls, only immigrants living in Canada for 10 to 19 years experience less positive mental health than recent immigrants. There is no focal association between years of migration and positive mental health for immigrants living in Canada for 20 to 29 years. However, when controlling for social

support, immigrants living in Canada for 20 to 29 years have significantly worse positive mental health than their newly migrated counterparts. This indicates support for the hypothesis that social support acts as a suppressor for the relationship between years of migration and positive mental health, particularly with respect to this specific immigrant cohort. In short, social support has direct and indirect effects on positive mental health when it comes to this immigrant cohort. For any other immigrant cohorts (or other lengths of residence), social support has only direct effects on positive mental health.

There is good evidence to show that the healthy immigrant effect exists for self-rated mental health before and after controlling for demographic variables. Immigrants living in Canada for 10 to 19 years have the worse mental health profiles compared to the most recent and other long-term immigrant groups. For example, when controlling for socio-demographic and socio-economic variables, this group still has worse positive mental health and self-rated mental health relative to their most recent counterparts.

The mediating effect of interpersonal strain exists for the relationship between years of migration and psychological distress, positive mental health, and self-rated mental health. Social support buffers the negative effect of interpersonal strain on psychological distress and positive mental health, but not for self-rated mental health.

Compared to social support, interpersonal strain has a greater effect on psychological distress, but not on positive mental health. By contrast, social support has a greater effect on positive mental health than does interpersonal strain. Lastly, social support suppresses the relationship between years of migration and distress as well as self-rated mental health and, to some extent, positive mental health (not as visible).

6.3 The effect of age at migration on health behavior, social support, and interpersonal strain

This section examines the effect of migration in various periods of human development on psychological distress. Further, it also investigates how migration at different ages leads to differential exposure to risk and protective factors. Finally, it identifies risk and protective factors that act as pathways to psychological distress.

Hypotheses of the study include the following: (1) Migration in childhood or adolescence is associated with higher psychological distress than migration in adulthood. (2) Migration in childhood or adolescence is associated with worse health behaviors than migration in adulthood. (3) Migration in childhood and adolescence is associated with higher social support and higher interpersonal strain than migration in adulthood. (4) Health behavior, social support, and interpersonal strain act as pathways to higher psychological distress in adulthood for childhood and teenage immigrants.

Table 6.5 presents the association between age at migration and health behavior, social support, and interpersonal strain, adjusted for socio-demographic and socio-economic factors. The variable current age, age at migration, and years of migration are correlated. These variables are measured as a set of categories. This strategy reduces some issues of co-variance. To detect the covariant nature of age at migration, years of migration, and current age, I used variable inflation factor (VIF) diagnostics to examine the degree of multicollinearity. The average VIF was under 3, suggesting that variables in the models are not highly or moderately correlated. Individually, each variable did not have a VIF over 5, except for the age groups 55-64 years old and 65-74 years old, and years of migration over 50 years, which had VIF around 7.

The association between age at migration and tobacco use is not significant. As such, the hypothesis that younger age at migration increases chances of tobacco use is rejected and the

results of this specific dependent variable is not shown. Age at migration is significantly associated with other health behaviors.

Model 1 in Table 6.5 captures the odds of drug use at various age periods at migration. Model 1 indicates that migration in childhood and adolescence are associated with higher risks of drug use than migration in adulthood. Immigrants who migrated as children are approximately 4 more likely than those who migrated as adults (22-30 years old) to use drugs in their life time. For those who migrated in early adolescence, the risks are approximately 3 times. The risk of drug use is slightly lower for immigrants migrating in late adolescence (approximately 2 times).

Generally speaking, migrating before age 21 is a risk factor for lifetime drug use, and the risk monotonically increases as age at migration goes down. Comparing the effect of age at migration and years of migration on drug use, the results strongly suggest that years of migration are not associated with drug use.

Immigrants who are currently between the ages of 15 and 17 years old have 81% lower odds of experiencing drugs than those who are currently aged between 18 and 24 years old. Immigrants who are the oldest have 79% lower odds of lifetime drug use than immigrants aged between 22 and 30 years old.

Speaking a language other than English or French reduces the odds of drug use. With respect to country of origin, coming from non-European countries is associated with lower odds of drug use. Compared to British immigrants, immigrants from South America, Central America, the Caribbean, Africa, and various Asian countries, are less likely to use drugs. Italian immigrants also have a lower odds of drug use compared to British immigrants.

Model 2 in Table 6.5 presents the association between age at migration and alcohol use. Compared to immigrants who migrated between 22 and 30 years old, immigrants who migrated

in younger ages and slighter older age range (31-40) do not display significantly different drinking behaviors; however, immigrants who migrated in middle age or later (after 41) have around 40% lower odds of being a category where drinking is more common. Duration of migration has no significant association with drinking behavior, contradicting findings in previous studies (Almeida et al., 2010). The association between age and drinking behavior follows a U-shaped pattern, where adolescents and older adults are significantly less likely to consume alcohol compared to young adults between 18 and 24 years old, whereas those aged in between adolescence and old age are not significantly different from the reference group.

Immigrants who speak neither English nor French at home have 33% lower odds of alcohol consumption than those who speak either one of Canada's official languages at home. Country of origin plays a role in influencing immigrants' alcohol consumption patterns. Compared to British immigrants, immigrants from Central America, South America, the Caribbean, Africa, and Asia, have lower odds of alcohol consumption.

In Model 3, the association between age at migration and social support is presented, adjusted for socio-demographic backgrounds and socio-economic conditions. The hypothesis that migration in childhood or adolescence is associated with stronger social support than migration in adulthood is partially supported. The results show that migration before 8 years old is associated with significantly stronger social support than migration in young adulthood (22-30 years old). However, migration in early or late adolescence has no parallel advantages in accumulating social support.

Model 3 further reveals that length of migration makes no contribution to social support accumulation. The relationship between age and social support follows a U-shaped pattern, where social support levels significantly decrease in various middle and older age groups

compared to immigrants aged between 19 and 24, whereas immigrants who are adolescents, the old-old (75-84 years old) and the oldest-old (>85 years old) do not have significantly lower levels of social support. Source countries affect social support patterns. Immigrants from China, Hong Kong, or Taiwan, and other Asian countries have significantly less support than British immigrants.

Model 4 in Table 6.5 shows the association between age at migration and interpersonal strain, adjusted for socio-demographic and social-economic controls. Compared to immigrants arriving in Canada in young adulthood (22-30 years old), those arriving in Canada in childhood or adolescence reported experiencing higher levels of interpersonal strain. The coefficients reveal a monotonic decrease in interpersonal strain from migration prior to 8 years old to migration after 41 years old, suggesting that migration in childhood generates greater exposure to interpersonal strain.

Length of migration reduces interpersonal strain, but it takes 40 to 50 years of residence to decrease exposure to interpersonal stress. Unlike its clear association with social support, age has no association with interpersonal strain.

The pattern of significant association between source countries and interpersonal strain reveals that, relative to British immigrants, immigrants from South America, Central America, the Caribbean, Italy, Asia, and Oceania experience less interpersonal strain. Together in Table 6.5, Model 3 and Model 4 show that immigrants from China, Hong Kong, Taiwan, and Other Asia are the only groups experiencing both low social support and low interpersonal strain. Immigrants from other source countries do not have less social support but experience less interpersonal strain than those from the United Kingdom, including those from Central America, South America, the Caribbean, Other Europe, Italy, Africa, India, and Oceania. This pattern

suggests that immigrants from Asia may have fewer psychosocial resources when confronting with life demands.

Table 6.5 Effect of age at migration on health behavior, social support, and interpersonal strain (CCHS-MH 2012) (N=4,282)

	Model 1 (logistic: drug use) Odds Ratio	**Model 2 (ordered logistic: alcohol use)** Odds Ratio	**Model 3 (OLS: social support)** Coefficients	**Model 4 (OLS: interpersonal strain)** Coefficients
Age at migration				
22-30	-----	-----	-----	-----
0-8	4.191***	1.391	.064*	.428***
9-13	3.310***	1.179	.368	.366***
14-21	1.927***	1.112	.002	.170**
31-40	.813	.886	-.044	-.158**
40 and above	1.037	.586**	.042	-.315***
Migration				
0-9 years	-----	-----	-----	------
10-19 years	.875	1.071	.011	.042
20-29 years	1.266	1.412	.035	.034
30-39 years	.991	1.218	.069	-.160
40-49 years	.848	1.602	.038	-.290**
50 years and more	.442	1.080	.011	-.474***
Female (Male=0)	.472***	.333***	.060***	.085*
Age range				
18-24	------	-----	------	-----
15-17	.189**	.130***	-.062	-.162
25-34	1.129	.713	-.083*	-.104
35-44	.812	.641	-.092*	.033
45-54	.723	.665	-.126**	.073
55-64	.692	.574	-.163**	.055
65-74	.553	.351***	-.122*	-.083
75-84	.541	.274***	-.083	-.032
85 & older	.211***	.325***	-.004	-.164
Household types				
Couples only	-----	-----	------	------
Couples with (adult) children	.580***	.834	.031	.034
Single/unattached	1.058	.766*	-.135***	-.103*
Extended	.675	.595**	.045	-.185*
Female lone parent	.691	.649	-.090*	-.066
Other types	1.811	.824	-.017	.054
Income adequacy				
Lowest	-----	-----	------	-----
Lower-middle	.936	1.185	.012	-.015
Upper-middle	1.026	1.600***	.088***	-.039
Highest	1.415	2.694***	.145***	.050
Education				
Less than high school	------	-----	------	-----
High school	1.154	1.050	-.013	.040
Some post-sec.	2.128**	1.602	-.040	.077
Trade certificate	1.158	1.082	-.001	.236**
College/university certificate	1.629*	1.276	.038	.166*
Bachelor's degree	1.590	1.677*	.055	.200*
Above bachelor's degree	1.354	1.675*	.122***	.190
Linguistic minority				
English/French	-----	-----	------	-----
English/French/Other	.443***	.782	.016	.034
Other	.392***	.680**	-.007	-.246***
Country of origin				
U.K	-----	-----	------	------
North America	1.471	.861	.061	.005
South & Central America/Caribbean	.602*	.558*	.005	-.305***
Other Europe	.732	.897	-.014	-.265***

Gany	1.103	1.280	.015	-.082
Netherlands	.611	.722	-.081	-.088
Italy	.488*	.919	.030	-.395***
Africa	.263***	.167***	.039	-.238*
China, Hong Kong, & Taiwan	.315***	.273***	-.216***	-.351***
Philippines	.841	.463**	-.021	-.170
India	.284***	.194***	-.028	-.343***
Other Asia	.315***	.225***	-.115**	-.228**
Oceania	.287	1.084	-.015	-.325*
Place of residence				
1st-tier immigrant receiving city	-------	-----	------	------
2rd-tier immigrant receiving city	.970	.841	.000	.094
Other cities	.855	.959	.025	-.002
Constant	1.043***	-----	5.922***	1.414***
Adjusted R^2	-----	-----	11.83%	15.08%
Cut 1		.085***		
Cut 2		.249***		

p<0.05* p<0.01** p<0.001***
cut 1=non-drinker /occasional drinker regular drinker
cut 1=non-drinker occasional drinker / regular drinker

6.4 The effect of age at migration on psychological distress

Table 6.6 presents a series of nested models comparing the change in coefficient between age at migration and psychological distress, accounting for health behaviors, social support, and interpersonal strain, in different models.

Model 1 shows that migrating as children (0-8) or adolescents (9-13) is associated with higher psychological distress in adulthood than those migrating as young adults (22 -30). Model 1 further indicates that longer duration of migration reduces psychological distress rather than increases it. This specific finding indicates that the relationship between length of migration and psychological distress could be spurious without accounting for age at migration.

Female immigrants experience higher psychological distress than their male peers. Separated, divorced, widowed, or never married immigrants currently living alone reported having higher psychological distress than those who live with a partner. Relative to immigrants of the lowest household income bracket, immigrants with the highest household income level experience significantly less psychological distress. Immigrants who speak neither English nor French at home have less psychological distress, compared to those who speak one of Canada's official languages at home. Previous research has generated contradictory findings regarding the

protective effect of native language retention on mental health. Some studies support the protective effect of native language proficiency on mental health (Mui, Kang, Kang, & Domanski, 2007), whereas others do not (Leong, Park, & Kalibatseva, 2013). In efforts to explain this contradiction, Schachter et al. (2012) suggest that the protective effect of language on mental health only extends to immigrants who are bilingual.

Health behavior variables including lifetime drug use and drinking behavior were added in Model 2. Lifetime drug use is directly associated with psychological distress. Being a regular drinker also increases psychological distress compared to being a non-drinker. Lifetime drug use has an indirect effect on the relationships between age at migration and psychological distress. The magnitude of the association between migration in childhood (as well as migration in early adolescence) and psychological distress reduced after lifetime drug use is adjusted for, suggesting mediation effects. Psychological distress for immigrants arriving in Canada after age 41 increased slightly in Model 2 after adjusting for drinking behavior. However, the change in R^2 from Model 1 to Model 2 is 1%, suggesting that health behavior does not account for much variation in psychological distress for immigrant populations, and that the mediation effects are small. As a result, the patterns of association between other covariates and psychological distress did not vary much after adjusting for the effect of health behavior.

In Model 3, the contribution of social support to psychological distress was adjusted. Social support has a direct effect on psychological distress. The explained variance also increased to 16.41% in Model 3, compared to 7.97% in Model 1. Consistent with previous literature, social support protects immigrants' mental health (Mulvaney-Day et al., 2007). After adjusting for social support, migration in childhood, early adolescence, and late adolescence were associated with higher psychological distress (migration after 41 was associated with less psychological

distress). In Table 2 (Model 3), we learn that compared to migration in early young adulthood (22-30), migration in childhood is significantly associated with greater social support. Various other groups, including those who migrated in early adolescence, late adolescence, and after 41, also enjoy greater social support than those who migrated in young adulthood (22-30), though the difference is not significant. After adjusting the effect of social support, the stronger magnitude (larger coefficients) in the association between age at migration and psychological distress indicates the suppression effects of social support. In other words, though migration in childhood is associated with higher psychological distress, the social support accrued to childhood immigrants actually reduces some negative emotional consequences of early migration. However, the level of social support childhood immigrants accumulate throughout the life course is still not strong enough to fully cancel out the negative emotional consequences associated with early migration.

Interpersonal strain was added to Model 4. Results showed that interpersonal strain was positively and directly associated with psychological distress. Compared to social support, interpersonal strain explained more variance in psychological distress, since the explained variance in Model 4 was larger than in Model 3. Interpersonal strain had an indirect effect on psychological distress. The relationship between migration in childhood and psychological stress was partially mediated by interpersonal strain. For the association between migration in adolescence and psychological distress, it was a full mediation. Immigrants arriving in Canada between the ages of 31 and 40 appeared more distressed, as they experience less interpersonal strain than the reference group (22-30) in Table 4.2 (Model 4).

In Model 5, all variables were entered into the model. Migration in childhood and adolescence are still associated with higher psychological distress compared to the reference

group (22 to 30). Length of migration largely did not play a role in psychological distress, except for duration of migration over 50 years. Drinking behavior no longer has a significant effect on psychological distress when accounting for social support and interpersonal strain. Nevertheless, lifetime substance use continues to have a significant effect, though its magnitude is attenuated.

Table 6.6 Effect of age at migration on psychological distress (CCHS-MH 2012) (N=4,282)

Variable	**Model 1 (controls)** Coefficients	**Model 2 (health behavior)** Coefficients	**Model 3 (social support)** Coefficients	**Model 4 (interpersonal strain)** Coefficients	**Model 5 (final model)** Coefficients
Age at migration					
22-30	-----	-----	-----	-----	-----
0-8	.473***	.400***	.534***	.257**	.298***
9-13	.399***	.344**	.434***	.215	.239*
14-21	.157	.131	.160*	.072	.071
31-40	.099	.108	.057	.177*	.137
>41	-.301*	-.298*	-.265*	-.146	-.129
Migration					
0-9 years	-----	-----	-----	------	------
10-19 years	.028	.029	.038	.007	.019
20-29 years	-.054	-.078	-.021	-.071	-.055
30-39 years	-.338*	-.348**	-.273*	-.258*	-.219
40-49 years	-.407**	-.417**	-.370**	-.261	-.256
50 years and more	-.569**	-.541**	-.559**	-.330	-.339*
Females (Males=0)	.222***	.281***	.279***	.180***	.265***
Age range					
19-24	------	------	------	-----	-----
15-17	.017	.139	-.042	.099	.105
25-34	-.191	-.187	-.270**	-.139	-.211*
35-44	-.182	-.164	-.269*	-.199	-.261*
45-54	-.172	-.147	-.292*	-.208	-.291*
55-64	-.082	-.048	-.237	-.110	-.218
65-74	-.217	-.163	-.333	-.175	-.247
75-84	-.157	-.094	-.236	-.141	-.173
>85	-.094	-.002	-.098	-.011	.024
Household types					
Couples only	-----	-----	------	------	-----
Couples with (adult) children	.020	.005	.010	-.046	-.004
Single/unattached	.161**	.166**	.031	.206***	.094
Extended	-.142	-.113	-.098	-.054	-.013
Female lone parent	.042	.069	-.044	.068	.007
Other types	-.037	-.057	-.053	-.012	-.040
Income adequacy					
Lowest	-----	-----	------	-----	-----
Lower-middle	.066	.063	.078	.074	.080
Upper-middle	-.054	-.071	.031	-.034	.025
Highest	-.183*	-.230**	-.044	-.208**	-.113
Education					
Less than high school	------	------	------	-----	-----
High school	.664	.060	.051	.044	.033
Some post-sec.	.249	.206	.021	.210	.157
Trade certificate	.087	.070	.087	-.031	-.038
College/university certificate	.057	.036	.093	-.026	.003
Bachelor's degree	.120	.091	.172	.019	.059
Above bachelor's degree	.122	.101	.238*	.026	.124
Linguistic minority					
English/French	------	-----	------	-----	-----
English/French/Other	-.132	-.085	-.118	-.150*	-.108

Other	-.215**	-.163*	-.222**	-.091	-.084
Country of origin					
U.K.	-----	-----	------	------	------
U.S.	.210	.192	.269*	.208*	.247*
South & Central America/Caribbean	-.041	-.001	-.036	.113	.115
Other Europe	.038	.053	.025	.171	.150
Germany	.340	.332	.355	.381*	.383*
Netherlands	.202	.234	.125	.247	.192
Italy	.195	.222	.224	.394**	.407***
Africa	.013	.121	.050	.133	.209
China, Hong Kong, & Taiwan	-.120	-.024	-.327**	.056	-.090
Philippines	-.053	-.619	-.073	.033	.019
India	-.104	-.009	-.131	.068	.077
Other Asia	.124	.214	.014	.239*	.181
Oceania	.213	.219	.198	.376	.341
Place of residence					
First-tier immigrant receiving city	-----	------	------	------	------
Second-tier immigrant receiving city	.107	.113	.107	.059	.069
Other cities	.015	-.007	.009	-.014	.011
Drug use(Yes=0)		.259***			.144*
Drinking behavior					
Non-drinker		-------			------
Occasional drinker		.099			.081
Regular drinker		.168*			.096
Social support			-.954***		-.806***
Interpersonal strain				.504***	.437***
Constant	1.819***	1.553***	7.470***	1.107***	5.823***
Adjusted R^2	7.97%	8.98%	16.41%	19.69%	25.82%

p<0.05* p<0.01** p<0.001***

Chapter 7 Discussion and Conclusion

7.1. Healthy immigrant effect for mental health: The Canadian case

7.1.1 The importance of studying multiple psychological outcomes

One of the major contributions of this dissertation is the study of different non-pathological mental health measures among Canadian immigrants. Previous studies on Canadian migrant mental health mainly focus on mental disorders (Aglipay et al., 2013; Puyat, 2013; Smith et al., 2006; Seeman, 2011), and few studies investigate normal reactions—such as psychological distress—to stressful situations (Montazer et al., 2016; Noh & Avison, 1996; Setia, Quesnel-Vallee, Abrahamowicz, Tousignant, & Lynch, 2012). There is very limited Canadian research that examines the healthy immigrant effect on self-rated mental health (Bergeron et al., 2009; Kwak, 2016; Maximova & Krahn, 2010) none pertaining to the healthy immigrant effect on positive mental health. Focusing mainly on the pathological outcomes results in an inherent emphasis on the mental illness treatment approach (Keyes, Dhingra, & Simoes, 2010), which targets the most marginalized and vulnerable. While this approach might be suitable for earlier waves of immigrants from Southern Europe or refugees from Eastern Europe (who had higher rates of suicide and psychiatric disorders [Krupinski, 1984]), it is less than ideal for current immigrants arriving in Canada with good mental health. Although recent immigrants' emotional problems develop shortly after they settle in Canada (Newbold, 2009), the fact that they have not been clinically distressed means the mental illness treatment approach does not cannot be applied. To move my dissertation away from this approach, I embrace the mental health promotion approach (Keyes et al., 2010), which targets those with optimal or less-than optimal mental health, and identifies protective factors that help to maintain it. I include both psychological distress and positive mental health to show that while recent immigrants have

relatively lower psychological distress than long-term immigrants, they do not have better positive mental health. I also include self-rated mental health in my analysis, which measures respondents' subjective evaluation of their current mental health status, rather than diagnostic scales based on symptoms of emotional vitality and positive functioning (Keyes, 2002) or symptoms of anxiety and depression (Kessler, Barker, & Colpe, 2003).

7.1.2 The healthy immigrant effect: The nativity effect and some confounding factors

In this dissertation, I investigate two approaches to studying the healthy immigrant effect: the first is the cross-group comparison analysis, which compares the mental health status of the foreign-born against that of the native-born, and the second is the within-group comparison that divides immigrants into groups based on duration of migration.

In the cross-group comparison, I use the native-born as the reference group and compare it to different immigrant cohorts. This analytical angle allows me to explore the trend of mental health convergence between the foreign- and native-born.

Comparing the foreign-born to the native-born, an analysis of the CCHS-MH 2012 shows that the health advantages of foreign-born status on psychological distress and self-rated mental health only extend to the most recent immigrant cohort[20]. However, recent immigrants show no higher positive mental health than the native-born. Another finding further challenges the mental health convergence pattern found in previous studies (Ali, 2002; Ali et al., 2004): long-term immigrants living in Canada for 30 to 39 years have significantly higher positive mental health than the native-born.

[20] Comparing all immigrants against non-immigrants, the foreign-born status only has a universal health advantage over native-born status on psychological distress, but the advantage does not extend to positive mental health and self-rated mental health.

The results from GSS-SI 2014 generally complement those based on CCHS-MH 2012, which show that, compared to the native-born, immigrants living in Canada for less than 10 years and between 10 to 19 years, have better subjective well-being and self-rated mental health. This result supports the work of Berry and Fou (2016) who, using GSS-SI 2014, find a healthy immigrant effect for both subjective well-being and self-rated mental health. Similar to the findings on positive mental health, another long-term immigrant cohort (those living in Canada for over 50 years) reports significantly higher subjective well-being than the native-born.

One important message emerging from the findings is that the healthy immigrant effect is more visible for negative psychological outcomes and self-rated mental health, but it is less straightforward when the outcomes are positive, such as subjective well-being and positive mental health. Future research should explore the positive psychological functioning of immigrants, including self-acceptance, happiness, and emotional vitality, to ensure that immigrants' mental health flourishes—rather than languishes—in Canada.

There are some confounding factors that could potentially drive the mental health convergence between long-term immigrants and the Canadian born. One of the major factors is the aging effect of immigrants. Previous studies have repeatedly found that immigrants do not age as well as non-immigrants (Cullar et al., 2004; Gonzalez, Haan, & Hinton, 2001; Hill et al., 2001). Although I control for current ages, chronological age should not be mistaken as a full indicator of physical health, since some gerontologists argue that individuals facing cumulative disadvantages such as childhood adversities or career interruptions will age more drastically (Wakabayashi & Donato, 2006; Wakabayashi, 2010). The cross-sectional design of CCHS-MH or GSS-SI did not allow me to investigate the differential rates of aging and their effects on the convergence of mental health profiles between immigrants and the native-born, but other

longitudinal studies have suggested that immigrants are more likely to transition into poor health compared to the native-born (Fuller-Thompson, Noack, & George, 2011; Newbold, 2005).

The other factor is the changing racial composition of immigrant cohorts arriving after 1970. Some studies have argued that compared to their white peers, racial minorities experience more rapid declines in health, although the initial healthy immigrant effect is especially strong for the visible minorities (Kobayashi & Prus, 2012). Other researchers suggest that visible minorities tend to view their health more pessimistically than whites (Boardman, 2004; Landrine, Corral, Hall, Bess, & Efird, 2016; Su, Wen, & Markides, 2013). For example, comparing black and white adults' self-rated health, Boardman (2004) found that even when controlling for chronic conditions, black adults tend to rate their health more poorly than their white counterparts.

The final confounding factor is the period effect. Aydemir and Skuterud (2004) and Reitz (2001) suggest that the economic receiving context was not favorable to immigrants arriving in Canada after 1980. The entry earning gap between immigrants and non-immigrants was wider in the early 1990s (23%) than in the 1970s (9%) (Picot & Sweetman, 2005). According to Picot and Sweetman (2005), it took immigrants arriving in the 1970s around twenty years to close the 9% earning gap; however, they did not observe any signs that successive immigrant cohorts were closing the gap. Using longitudinal data analysis, Wakabayashi (2010) argues that migration at the time of economic recession periods has a profound effect on the aging process, as financial vulnerabilities impede health maintenance.

7.1.3 The healthy immigrant effect: The duration effect

The healthy immigrant effect also exists to some extent when we compare long-term immigrants to recent immigrants. Based on the Canadian immigrant samples from CCHS-MH

2012, the healthy immigrant effect exists for psychological distress, positive mental health, and self-rated mental health, but this effect is not equally strong across psychological outcomes. My findings suggest that the healthy immigrant effect is strongest for psychological distress, followed by self-rated mental health, and is less apparent for positive mental health. For instance, only immigrants living in Canada for 10 to 19 years have less positive mental health than the most recent immigrants, whereas immigrants living in Canada for 10 to 19 years and 20 to 29 years have higher psychological distress. The psychological distress-positive mental health comparison between the most recent immigrants and long-term immigrants supports the notion that recent immigrants' lower psychological distress relative to long-term immigrants does not necessarily indicate that the former will have better positive mental health.

Results from GSS-SI 2014 show an even stronger healthy immigrant effect for self-rated mental health[21]. All long-term immigrant groups reported worse self-rated mental health than their most recently-migrated counterparts. In contrast to the strong healthy immigrant effect for self-rated mental health, such an effect does not exist for subjective well-being across immigrant groups. These findings validate the multidimensional nature of mental health. The relative stability of subjective well-being does not reflect the deterioration of self-rated mental health across immigrant cohorts.

There are a few unaccounted reasons in my model that could have made the differences in immigrant groups' subjective well-being more pronounced. First, given the nature of the available survey data, I was unable to consider immigrants' physical health, coping abilities, experiences of discrimination, and adaptation to life in Canada. A report using the Longitudinal Survey of Immigrants to Canada (LSIC) has found that approximately 75% of the immigrants

[21] The sample size in GSS-SI2014 is twice larger than CCHS-MH 2012.

landing between 2000 and 2001 reported that they were satisfied or very satisfied with their life in Canada; however, it is worth noting that economic immigrants have significantly lower life satisfaction than other types of immigrants (Houle & Schellenberg, 2010). In this vein, Houle and Schelleberg's models accounted for various variables that I did not include in my models, including self-rated health status, discrimination, difficulties adapting to Canadian life, problems accessing health and education services, and coping abilities.

7.1.4 The mental health consequences of the Canadian political economy in 1990s

The pattern that not all long-term immigrants have worse mental health status than the most recent immigrants reveals that further research should consider the cohort effect and historical contexts of specific waves of immigration. The following discussion considers possible causes underlying long-term immigrants' mental health deterioration, particularly the cohort migrating between 1990 and 2000. This cohort shows significantly worse psychological outcomes on all mental health measures, including psychological distress, positive mental health, and self-rated mental health (in both CCHS-MH 2012 and GSS-SI 2014). This cohort also has the worse subjective well-being compared to their recently-migrated and other long-term counterparts, though the difference is not significant.

Based on the findings, the mental health deterioration pattern is most apparent for immigrants living in Canada between 10 to 19 years (this pattern also applies to those living in Canada for 20 to 29 years, though it is less pronounced). These two cohorts of immigrants migrated between 1992 and 2002, and between 1982 and 1992. These two specific cohorts are made up by immigrants from non-traditional source countries. There are four potential reasons for the worse mental health profiles for these two specific cohorts, including economic

recessions, devaluation of foreign market experiences, welfare restructuring, and subjective social standing.

Sociologist Jeffery Reitz (2001) argues that institutional changes in Canada, including the rising educational levels of the native Canadians, economic downturns in late 1980s and early 1990s, and the development of a knowledge economy, all served to curtail Canadian immigrants' economic integration in the 1990s. Reitz further suggests that compared to the institutional influences of receiving countries, source countries play a much smaller role in determining economic outcomes for immigrants. Comparing the entry earnings of various immigrant cohorts, economists Aydemir and Skuterud (2004) estimated that immigrant males arriving in Canada between 1990 and 1994 experienced severe wage penalties (31% lower entry earnings) compared to those arriving between 1969 and 1999. The entry earnings were 24% lower for immigrant males arriving between 1995 and 1999, 9% lower for those arriving between 1980 and 1984[22], and 15% lower for those arriving between 1986 and 1989. Additionally, Canadian economists Green and Worswick (2012) argue that while immigrants arriving in the 1980s experienced similar economic challenges as the native-born, immigrants arriving in the 1990s faced unique challenges, as they received minimal return for their foreign market experiences in their entry earnings. These broader macro-level backgrounds offer potential reasons undermining immigrants' mental health profiles.

Recently, sociologists have argued that objective economic conditions only partially explain immigrants' emotional well-being (Baron-Epel & Kaplan, 2009; Franzini & Fernandez-Esquer, 2006; Leu et al., 2008; Gelatt, 2013; Gong, Xu, & Takeuchi, 2012). Gelatt (2013) argues that

[22] Compared to the natives, immigrants arriving between 1980 and 1982 earned 21% less entry earnings (Green & Worswick, 2004).

subjective social standing (using reference groups in the country of destination or origin) may also explain immigrants' mental health. Some studies argue that long-term immigrants are more likely to compare themselves to the native-born than recent immigrants (Franzini et al., 2006; Hurh & Kim, 1990). It is possible that long-term immigrants who encounter more barriers to economic integration experience deeper feelings of relative deprivation.

Most healthy immigrant effect studies focus on the characteristics of immigrants while ignoring the features of the receiving country of a particular historical time. Previous research supports the link between economic downtimes and worse mental health (Frank, Davis, & Elgar, 2014). Without rooting the issue of immigrant mental health deterioration in the historical context, the attention to immigrants' health behaviors and cultural practices detracts from interrogating the structural constraints shaping immigrants' mental health. Furthermore, shifting lifestyles and changing cultural practices are a response to the socio-historical context, not a choice or preference for a different lifestyle. In this vein, Ruhm (2005) finds that, as a response to reduced working time during economic recession, leisure activities and exercise time increase.

The receiving context of Canada was less forthcoming for immigrants migrating in the late 1980s and early 1990s, with the economic recession negatively impacting immigrants' social integration. The state restructuring occurring in the 1990s ensured new immigrants would encounter more stringent requirements for family sponsorships, fewer settlement services, and fewer language training programs (Arat-Koc, 1999). Considering the social and political implications of economic recessions in the 1980s, it is possible that immigrants migrating during the period also faced major obstacles building social support. Nonetheless, research on the healthy immigrant effect rarely includes dimensions of social support, though broader socio-historical contexts have wide-ranging impact on the social fabric of different immigrant cohorts.

As a result, in the analysis, I investigated whether social support or interpersonal strain (as a negative form of social support) were major determinants of immigrants' mental health.

7.1.5 The intersection of immigrant program, citizenship status, and length of migration on mental health

As a unique immigrant group, refugees have garnered the concerted attention of researchers. In Canada, refugees are frequently the target group in studies of depression and mental health more generally (Beiser & Hou, 2001), post-migration stresses (Beiser et al., 1995; Hyman et al., 2000), and barrier to health care (Stephenson, 1995).

Previous research argues that official immigration categories are meaningful status differences that determine immigrants' needs and barriers to health care (Oxman-Martinez, Hanley, Lach, & Khanlou, 2005). Refugees affected by armed conflicts in their home countries were exposed to unique risk factors prior to migration, including various forms of communicable diseases, nutritional deficiencies, war injuries, and war-related trauma (Toole & Waldman, 1997). Economic and family immigrants from stable economic-political regimes, however, do not share these risks. Compared to economic and family immigrants, refugees face the unique stress of displacement prior to landing. Refugees also have stronger motives to settle in Canada permanently (Yu et al., 2007). For example, according to Yu et al. (2007), 97.2% to 98.8% of refugees have obtained, applied for, or intend to apply for Canadian citizenship, compared to 91.3% to 94.6% of economic immigrants and 87.3% to 90.4% of family immigrants. Additionally, when asked why one might choose to stay in Canada permanently, 53.5% refugees cited absence of war and conflict, and 25.3% cited religious freedom. Better quality of life, however, is more important for economic immigrants (58.4%) than for refugees (54.7%), and least important for family immigrants (48.6%).

Despite these profound differences, comparisons of the health profiles across refugees, family immigrants, and economic immigrants are few and far between. Limited Canadian research does show a health disadvantage for refugees compared to non-refugees (DesMeules et al., 2005; Newbold, 2009; Ng, Pottie, & Spitzer, 2011; Pottie et al., 2008). At the outset of this dissertation, I hypothesized that refugees' subjective well-being and self-rated mental health would be worse than that of economic and family immigrants. Results suggest that type of immigrant status does not have a significant effect on subjective well-being or self-rated mental health after controlling for socio-demographic backgrounds and socio-economic factors. However, more refined categories, for example, which consider the combined influences of initial landed programs and current citizenship status, reveal some intriguing mental health differences after controlling for years of migration, socio-demographic backgrounds, and socio-economic factors[23].

The following discussion is based on results derived from GSS-SI 2014. CCHS-MH 2012 does not ask respondents to report their landed programs and citizenship status, so it does not help to explain whether categories of immigrant status create mental health differences among immigrants.

My results suggest that without controls, compared to economic immigrants with dual citizenships (reference group), various immigrant categories have worse self-rated mental health, including: economic immigrants with Canadian citizenship only, family immigrants with dual or

[23] Beyond the status differences between immigrant categories, I further differentiate them based on their citizenship status within each immigrant category. For example, I compare refugees or family immigrants with dual citizenships, Canadian citizenship only, or permanent residence status against economic immigrants with dual citizenships. I default economic immigrants with dual citizenships to the reference category because they enjoy 'flexible citizenship,' a concept Ong (1999) uses to capture the experience of economic immigrants, who are able to accumulate economic and cultural capital via migration without being confined by national boundaries.

Canadian citizenship, and refugees with Canadian citizenship only. Surprisingly, refugees without Canadian citizenship do not fare worse than the reference group. Despite visible gaps in self-rated mental health, there is no significant differences in subjective well-being across immigrant groups. The combined categories of landing programs and citizenship status do not have any effect on subjective well-being.

With socio-demographic and socio-economic controls, the mental health gap between economic and family immigrants closes, but refugees with (single) Canadian citizenship continue to fare worse. The fact that refugees successfully naturalized with Canadian citizenship fare significantly worse in self-rated mental health (but not refugees with permanent residence status and those with dual citizenship) than economic immigrants with dual citizenship is difficult to explain, given that there is currently limited literature to guide the interpretation. The American literature supports a negative health selection into naturalization for immigrants who require health coverage (Gubernskaya et al., 2013). The Canadian context differs from the American context in that Canadian immigrants are covered by universal health coverage. This additional aspect of social security makes gaining citizenship less attractive to immigrants to Canada than those choosing the U.S. as their country of destination.

However, when immigrants apply for citizenship, they need to consider the possibility of losing citizenship to their home country. Many countries—including Afghanistan, Ethiopia, Iran, Iraq[24], Kuwait, Laos, Libya, Republic of Congo, Somalia, Ukraine, Vietnam[25], and Yemen—that have yielded refugees do not allow dual citizenship. In these cases, refugees facing health

[24] Dual citizenship is not allowed prior to 2006

[25] Dual citizenship is allowed if citizens have valid reasons, but there is a legal process to go through.

barriers for reasons other than coverage in Canada do not have the health benefits offered by their home countries.

The issue of dual citizenship is relevant. Immigrants who face barriers to health care may rely on homeland medical services (Wang & Kwak, 2015). Having dual citizenships facilitates meeting their healthcare needs. The mental health gap between naturalized immigrants holding two passports and those holding only a Canadian passport may stem from the former's abilities to meet their medical needs by travelling home. It is worth noting that all groups of naturalized immigrants with Canadian citizenship fare worse in self-rated mental health than economic immigrants with dual citizenship, but only refugees with Canadian citizenship experience significantly worse mental health after controls. It is also important to note that the mental health gap between permanent residents and dual citizens is narrower than that which exists between single (Canadian) citizenship holders and dual citizens, although these gaps are not significant.

The significant difference between economic immigrants with dual citizenship and refugees with (single) Canadian citizenship might disappear if we account for unmet mental health care needs. Unfortunately, GSS-SI 2014 does not include any questions pertaining to health care needs. Though CCHS-MH 2012 includes the dimension of mental health care needs, there are no measures of immigrant categories. A recent report using CCHS-MH 2012 estimates that 10% of Canadian experience a mental disorder (Sutherland & Findlay, 2013). However, among those who have perceived needs for mental health care, only 66.7% have their needs fully met. The other 21.1% have their needs partially met, and the rest of 12.2% have their needs entirely unmet. This report does not investigate immigrants' perceived needs for mental health care, but current literature using CCHS annual surveys suggests that some groups of immigrants

experiencing depression, particularly Asian immigrants, use less mental health services than others (Tiwari & Wang, 2008).

Returning to the point of refugees' poorer self-rated mental health. Most of the settlement services for refugees in Canada cater to newcomers. And although some settlement programs help refugees navigate the Canadian health care system, many barriers remain. Refugees to Canada are covered by the Interim Federal Health Program; however, this program does not offer mental health care. Recent studies suggest that immigrants generally have problems finding a family physician that takes new patients, cannot afford prescription drugs, and express frustration with long wait times (Asanin & Wilson, 2008). Walk-in clinics or hospitals thus become the solution for immigrants to access primary care (Asanin & Wilson, 2008).

My discussion here is meant to indicate that the effect of immigrant categories on self-rated mental health is not substantiated. But the effect of refugee status on self-rated mental health becomes visible when we combine landed programs and citizenship into one single category. In light of this, I suspect that the initial impact of immigrant categories on mental health is passed down to the processes of naturalization, an important aspect of assimilation (Liang, 1994) that affects mental health. The link between immigrant categories and naturalization is mediated by many potential factors. One of said factors is transnational ties (Gilbertson & Singer, 2003). Gilbertson and Singer (2003) argue that Dominican immigrants have lower rates of naturalization in the U.S. because they pay frequent visits to their homeland and maintain strong social connections to family members in their home country. Many also do not perceive the status differences between being a permanent resident and citizen in the U.S. Based on the aforementioned studies, I suspect that immigrants with only Canadian citizenship are particularly vulnerable with regards to social support compared to permanent residents. They are also more

socially disadvantaged compared to those who maintain dual citizenship[26]. Future studies should pay more attention to the impact of naturalization on mental health, since claiming citizenship in the country of destination might potentially affect immigrants' social ties to their home country. More importantly, there is little research on the unmet health care needs of naturalized immigrants who lost citizenship to their home country.

7.1.6 Conclusion

This section of discussion contributes to our understanding of the healthy immigrant effect for mental health in the Canadian context. First, the results partially support the healthy immigrant effect for mental health. We see a clearer pattern of healthy immigrant effect for psychological distress and self-rated mental health. But when outcome variables measure positive psychological functioning, such as positive mental health and subjective well-being, not all long-term immigrant cohorts' mental health converge with that of the native-born, contrary to extant literature. Second, the results support the argument of Keyes (2007) that absence of mental illness is not an indicator of good mental health. Compared to recent immigrants, long-term immigrant cohorts not suffering from an increase in psychological distress do not experience a growth in positive mental health. Third, the historical contexts of each immigrant cohort deserves some attention. Not all long-term immigrant cohorts experience mental health deterioration, and some experience it more profoundly that others. My findings suggest that

[26] The models based on GSS-SI 2014 I presented in Chapter 4 do not include any dimensions of social support. However, to confirm my speculation I include immigrants' social ties, including close relatives, close local relatives, and close local friends in the models with controls presented in Chapter 4. The mental health gap between economic immigrants with dual citizenship and refugees with only Canadian citizenship reduces but not fully diminishes. Regressing immigrant categories on social ties, I find that refugees have significantly fewer close relatives than economic immigrants. This might potentially mean that they lose close relatives due to political turbulence. Across all immigrant categories, economic immigrants have the highest number of close local friends, while family immigrants have the highest number close local relatives. Refugees, however, are not well-supported socially.

immigrants arriving in Canada in the 1990s may have been impacted by economic recession and the state restructuring more so than other immigrant cohorts, and as such scored the lowest on all mental health measures, with the exception of subjective well-being. Finally, I suggest that categories of immigrant status alone are not enough to capture the mental health differences among immigrants. The naturalization process also matters. The results show that refugees successfully becoming Canadian citizens but losing their citizenship to their home countries fare a lot worse in self-rated mental health, as opposed to economic immigrants with dual citizenship.

There are limitations to this study. Both CCHS-MH 2012 and GSS-SI 2014 are theme-focused. CCHS-MH 2012 has a variety of mental health measures, but it does not capture immigrants' landing programs. GSS-SI 2014 has even more limitations compared to CCHS-MH 2012, since it only interviews respondents who speak English or French. This sampling strategy potentially excludes immigrants and refugees whose work do not involve using English or French or those who did not plan for coming to Canada (and hence did not learn English in advance).

7.2 The "what" question: Social determinants of health perspectives on immigrants' mental health

According to the World Health Organization (WHO), social determinants of health are defined as, "the conditions in which people are born, grow, work, live, and age, and the wider set of forces and systems shaping the conditions of daily life (WHO, 2017)." The social determinants of health approach sets itself apart from the biomedical and behavioral models that emphasizes medical interventions and health behaviors (Braveman & Gottlieb, 2014; Raphael, 2006). Currently, migrant health literature is dominated by the behavioral model where immigrants' health behavior or lifestyle is investigated under microscope, without direct

reference to broader socio-economic contexts (Carlsson & Johnson, 2004; Duncan & Simmons, 1996, Kim, Yang, Chee, Kwon, & An, 2015). A common problem with the behavioral model is that immigrants' behavioral changes are equated with the outcome of negative assimilation, while the conditions under which it occurs are not fully explained. Unhealthy lifestyles are the symptoms derived from disadvantaged social conditions. What need to be addressed are the underlying structural forces, such as low income or unemployment, that cause these behaviors to emerge. In light of this, proponents of social determinants approaches argue that health policies should address underlying forces that 'put people at risks of risks' (Phelan, Link, & Tehranifar, 2010). Successful health policies should help identify and remove social barriers that put immigrants at risks of adopting unhealthy lifestyles.

Previous research has used the social determinants of health approach to study immigrants' self-rated health (Dunn & Dyke, 2000; Gee et al., 2004; Newbold & Danforth, 2003; Newbold, 2005b), but very few studies use this approach to investigate mental health (Delara, 2016; Shakya, Khanlou, & Gonslaves, 2010). As a result, there is not enough comprehensive understanding of what determines Canadian immigrants' mental health. My study contributes to current knowledge by identifying social determinants of mental health for Canadian immigrants.

In Chapter 2, two research questions concerning social determinants of health in immigrants' mental health were posed: (1) I ask if structural determinants have a larger effect on immigrants' mental health than behavioral determinants, or if an integrated model combining both sets of determinants would be better than considering only one of the two. (2) I ask if primary social determinants of health play a larger role in explaining immigrants' mental health than secondary social determinants of health.

7.2.1 Is the effect of health behavior and social adversity on mental health comparable?

For my analysis, I identified the behavioral risks faced by Canadian immigrants, and compared them against structural inequalities. The comparison shows that immigrants' health behavior is not the major contributor to mental health deterioration. Health behavior explains 2.92% variance for psychological distress and 4.15% for positive mental health, which are much smaller than the contribution of socio-demographic and socio-economic determinants on psychological distress (9.63%) and positive mental health (8.46%). This supports previous findings that health behaviors play a much smaller role on health than structural inequalities (Castaneda et al., 2010; Raphael, 2006).

This analysis emphasizes the disproportionate effect of health behavior and social disparity on mental health—if the forces of social adversity are too unbearable for immigrants, they could have the best health behaviors but still suffer mental health deterioration. Nonetheless, I do not want to downplay the role of health behavior on immigrants' mental health. The significant effect of health behavior persists in the final model against the competition of socio-demographic, socio-economic, and psychosocial determinants. For example, obesity continues to contribute to psychological distress, and so do drug use and regular drinking. The more important question is whether researchers need to include health behavior measures when studying mental health. To show that the inclusive model (the unconstrained model) is better than social disparity model (the constrained model where coefficients of health behavior are set to zero), I conducted a likelihood ratio test, which showed that the inclusive model was significantly better than the social disparity model[27].

[27] The R^2 change is not very large for the inclusive model, so I conducted an incremental F-test is show that the change is statistically significant.

Other than their unique contributions to mental health, health behavior and social disparity have some overlapping influences on mental health. The effect of health behavior on psychological distress and positive mental health decreases from 2.92% to 1.11% and from 4.15% to 2.52% when structural determinants are accounted for (indicating that health behavior covariates with social disparity). Some behavioral determinants are not influenced by structural determinants, and so when we include structural determinants in the equation, we observe a decrease from 2.92% to 1.11% (4.15% to 2.52%) rather than from 2.92% to 0% (4.15% to 0%). The covariance of health behavior and structural determinants reflects the argument of Phelan et al. (2010: S37) that researchers should identify structural factors that 'put people at risk of risks.' Some behavioral risks are derived from structural determinants (the covariance) that cannot be eliminated by policies addressing individual responsibilities and choices.

7.2.2 Primary social determinants of health for Canadian immigrants

Other than comparing the effect of social disparities and health behaviors on immigrants' mental health, my study investigated if primary social determinants play a larger role in immigrant mental health than secondary social determinants. The sociology of health has a long tradition of studying the intersecting influences of gender, race, and SES—the "holy trinity of stratification"—on health (Brown et al., 2016: 203). However, the emphasis on articulating these as primary of social inequalities is so strong that secondary forms of inequalities, such as social support or sense of mastery, derived from these central ones are sometimes omitted from the research entirely (Brown, Richardson, Hargrove, & Thomas, 2016: 203; Veenstra, 2013).

There is no denying that for some racial and ethnic minorities, the historical legacy of institutionalized racism is so long and pervasive that race and SES become the fundamental causes of health (Williams & Collins, 2001). However, this emphasis can lead to the

misinterpretation that when it comes to mental health, the primary social determinants weigh more than the secondary social determinants. Empirically, primary social determinants of health defined as socio-demographic and socio-economic factors. My analysis shows that secondary social determinants of health, including social support (psychosocial resources) and interpersonal strain (psychosocial demands), explain more variance in psychological distress and positive mental health than primary social determinants of health.

The following discussions begin with primary social determinants of health—socio-demographic backgrounds and socio-economic conditions—that have significant effects on immigrants' mental health.

a. Socio-demographic backgrounds

Socio-demographic factors explain around 5.64% of the variance for psychological distress. Adding socio-economic factors increases another 4%. Together, these primary social determinants explain around 9.63% of the variance for psychological distress in immigrants. For positive mental health, primary social determinants explain slightly less of the variance. Socio-demographic factors alone explain 4.63 % of the variance for positive mental health. Adding socio-economic factors increases another 3.84%. Together, primary social determinants explain 8.46% of the variance for positive mental health.

Gender is a major social determinant of mental health for immigrants. Female immigrants experience more psychological distress, and report poorer mental health than their male counterparts. Nonetheless, their positive mental health is equal to male immigrants. My study does not focus on gender differences in mental health for specific ethnic groups, so mental health disadvantages associated with being female is an average effect across ethnic groups. A caveat to this interpretation is that there might be a gender gap in positive mental health within different

racial and ethnic groups. Keyes (2007) finds that the gender gap in positive mental health is apparent in Blacks but not in Whites.

Previous studies suggest that the healthy immigrant effect is especially strong for recent immigrants coming from non-European countries (Kobayashi & Prus, 2012). My results do not indicate any mental health advantages associated with being a racial minority immigrant; however, ethnic groupings[28] based on country of origin reflect some mental health inequalities[29] when controlling for other variables. My analysis indicates that earlier waves of immigrants, especially German and Italian immigrants, fare much worse in psychological distress and positive mental health than British immigrants. My further investigation reveals that physical conditions might have contributed to the mental health gaps among these ethnic groupings. The mean ages of these three groups are all around 65. However, holding age constant does not explain away German and Italian immigrants' mental health disadvantages. Both German and Italian immigrants still have significantly higher distress and lower positive mental health than their British counterparts when age is held constant. This is a prime example that chronological age should not be equated with chronic conditions or physical health. British immigrants' physical health and chronic conditions are better than German and Italian immigrants. For German immigrants, around 20% of them perceive their physical health to be poor; for Italians, the percentage is around 25%. For both German and Italian immigrants, their own health and

[28] I prefer the term ethnic groupings to ethnic groups because I merged various Chinese ethnic groups, such as Hong Kong, Taiwan, and mainland China into one category,

[29] The following sentences should be moved to methods: For my analysis, I control for both minority status and country of origin. Controlling for country of origin has multiple meanings for this research. First of all, migration means switching one sets of risk and protective factors to another (Newbold, 2005). Holding country of origin constant allows me to account for this change. Second, since CCHS-MH 2012 does not distinguish between refugees from economic and family immigrants, taking country of origin into consideration corrects of some of this omission. The result does not yield any significant relationship between minority status and any mental health measures included in this study. However, immigrants from several country of origins fare less well than British immigrants.

their family members' health are their major source of life stress. Future research should pay more attention to these two groups of older immigrants, since discussions on the health of older Chinese and Southeast Asian adults dominate the literature on aging and migration (Koehn, Neysmith, Kobayashi, & Khmisa, 2013).

Another surprising finding is that immigrants from the U.S. also suffer mentally. The mean age of American immigrants is around 55, and their physical health is not as problematic as German and Italian immigrants. Yet, they have higher distress and worse self-rated mental health than British immigrants. One major source of stress for American immigrants is financial worries. Around one third of Americans perceive financial situations as their primary stress. A U.S.-Canada comparison shows that Canadians' psychological distress peaks between the age of 20 to 24, while for Americans it peaks at the age of 50 to 54. The mean age of American immigrant samples is close to this age range (Keyes, 2014). It is possible that American immigrants import the psychological distress pattern from the U.S. to Canada, however, this speculation remains unconfirmed since very limited research has been conducted using Kessler's scale to compare psychological distress patterns in both countries (excepting Keyes, 2014).

In previous studies, Chinese Canadians as an ethnic group show lower psychological distress than British Canadians or North and West Europeans (Wu et al., 2003; Wu & Schimmele, 2005). The prevalence rate for depression in Asian Americans is 3.4%, which is much lower than the native-born Americans (Takeuchi, Chung, & Lin, 1998). Despite having lower risks of depression, Chinese immigrants have significantly lower positive mental health than British immigrants and most other immigrant groups. Chinese immigrants' lower positive mental health could mean that their mental health is impacted by migration, though they do not experience signs of psychological distress. Currently, there are limited mental health surveys that

specifically cater to Chinese immigrants in North America. A recent Chinese American Psychiatric Epidemiological Survey estimates that around 20% of Chinese Americans living in Los Angeles experience a major psychiatric disorder (Spencer & Chen, 2004). This estimate is much higher than other surveys not specifically tailored to Chinese immigrants.

The effects of age on immigrants' psychological distress conform to previous findings on middle-age as a life stage where the risk of distress or depression is low. Earlier studies suggest that 16 to 25 years old is a life stage for depression to peak (Kaltialia-Heino, Rimpela, Rantanen, & Laippala, 2001). My findings indicate that early adulthood for immigrants is the most critical period where risks of distress and depression are the highest. With respect to positive mental health and self-rated mental health, only immigrants aged between 45 and 54 fare significantly better in positive mental health, whereas no specific age groups are significant better or worse in their self-rated mental health.

b. Socio-economic influences

SES as a major source of health inequalities identified by previous research (Malmusi, Borell, & Benach, 2010; Williams & Collins, 2001) is not supported by my results. Surprisingly, household income has little to no effect on immigrants' mental health. This is not to deny the importance of SES in shaping mental health. In this vein, Malmusi et al. (2010) suggest that material deprivation helps identify mental health inequalities not captured by income.

Previous studies support the education gradient in health, especially in the American context (Kimbro, Bzostek, Goldman, & Rodriquez, 2008; Prus, 2011). However, Kimbro et al. (2008) suggest that the education gradient in health for immigrant populations is not as steep as that of the native-born population. Beginning with education, my findings show no effect on psychological distress and positive mental health. Immigrants with higher education generally do

not have lower distress or higher positive mental health compared to those with lower education. One exception is that immigrants with a graduate degree are significantly more distressed than those without a high school degree. Interestingly, their self-rated mental health is the best among all education levels. These inconsistent findings might be confounded by sense of control, a quality that makes education a unique form of social status protective of health (Mirowsky & Ross, 2003). Unfortunately, sense of control is not covered by CCHS-MH2012. This psychosocial factor is especially important when it comes to studying immigrants' health, since some studies do find that immigrants have lower sense of mastery (Chaze & Robson, 2014), or self-esteem (Bankston & Zhou, 2002). These are important psychosocial resources protective of mental health that could potentially mediate the relationship between education and mental health.

Previous research finds an income gradient in health for Canadian populations (Prus, 2011), where health status steadily increases as income level goes up. My findings do not support the income gradient in mental health for Canadian immigrants. The association between household income and psychological distress, positive mental health, and self-rated mental health bear no similarities. First, household income differentials have no effect in psychological distress. Second, immigrants in upper-middle household income range have worse positive mental health, while immigrants in lower-middle and highest household income range have similar levels of positive mental health to those in the lowest household income range. Third, immigrants in the highest household income range have significantly better self-rated mental health than those in the lowest household income range.

Work-related variables have significant impacts on all of the mental health measures chosen by this study. Immigrants working part-time are more distressed than those working full-time;

however, full-time job status does not affect positive mental health or self-rated mental health. Immigrants above working age or currently retired report higher psychological distress, less positive mental health, and weaker self-rated mental health. Kaida and Boyd (2001) find that older immigrants suffer from inadequate state income support. They pointed out three major institutional barriers that severely reduce older immigrants' economic security: (1) the 10-year residency requirement for OAS, (2) relatively short work history in Canada, and (3) the ineligibility for social assistance for sponsored older immigrants. Given the intimate link between economic security and health, it is not surprising that immigrants above working age struggle with poorer mental health. Immigrants currently not working do not have higher distress or worse self-rated mental health than those currently working, but their positive mental health is adversely affected. Since positive mental health as a construct involves dimensions of sense of purpose in life and self-acceptance, it is not as surprising for unemployed immigrants to have lower positive mental health. Immigrants who are permanently unable to work are the most disadvantaged when it comes to mental health: not only are they a lot more distressed than immigrants who are currently working, they also have significantly lower positive mental health, and are less likely to rate their mental health as good.

One unique feature of my study includes the investigation of the psychological consequences of linguistic minority status. The linguistic minority defined by this study is immigrants who do not speak English or French at home. The majority of these immigrants, however, do have the ability to communicate in English or French when they interact with people outside of their home environment.

Speaking a language other than English or French at home is a proxy for linguistic assimilation or cultural retention. For immigrants at lower levels of linguistic assimilation, such

as speaking with an accent or limited vocabulary, are exposed to more discrimination and experience higher psychological distress (Zhang et al., 2012).

My findings suggest that speaking an official language and a third language reduces psychological distress and enhances positive mental health for Canadian immigrants, but it has no effect on self-rated mental health. These findings are similar to another study on bilingual Latinos and Spanish-dominant Latinos, which indicates the protective effects of bilingualism on mental health (Mulvaney-Day et al., 2007).

7.2.3 Are primary social determinants of health more 'primary' than secondary ones for immigrants?

My study compares the contribution of primary and secondary social determinants of health to immigrants' psychological distress, positive mental health, and self-rated mental health. Using the social determinants of health approach, I show that social support and interpersonal strain have considerable influences over different psychological outcomes. This means that improving social support and reducing interpersonal strain can enhance several areas of mental health simultaneously. Social determinants called 'parsimonious predictors' of mental health are the ones having impact on several psychological outcomes (Robitschek & Keyes, 2009), which are useful for policy makers to formulate a single intervention that will make effective changes to various aspects of mental health in the population.

As stated before, literature on the healthy immigrant effect typically looks at the association between years of migration and health outcomes by controlling demographic and socio-economic factors. These factors are the primary social determinants in extant literature (Kostenuik & Dickinson, 2003), also considered upstream, macro-level influences on health (Aneshensel, 2009; Braveman et al., 2011; House, 2002). I go beyond this common route by

including the secondary social determinants—social support and interpersonal strain—in the analysis. These social determinants are also termed as psychosocial factors, which are pathways where upstream factors cascading into health patterns (Aneshensel, 2009; House, 2002).

My dissertation results suggest that immigrants' mental health is mainly determined by secondary social determinants. Social support and interpersonal strain together have a larger effect on psychological distress and positive mental health than socio-demographic background and socio-economic conditions. The focus on interpersonal strain is important because immigrant families often report unsynchronized pace of adaptation (Ben-David & Lavee, 1994). For immigrant youth, sense of incompatibility between two different cultures can especially heighten interpersonal strain (Espiritu, 2003; Giguere, Lalonde, & Lou, 2010). Another source of interpersonal strain can come from work situations where negative social interactions result from discrepant communication styles and cultural expressions (Bailey, 2000).

Phelan et al. (2010) argue that SES is the fundamental cause of health inequality. They maintain that SES translates into flexible or modifiable resources such as social connections, prestige and power, which benefit health. To combat health inequalities, they argue that breaking the chain reaction between SES and its association with privileged access to social resources helps redistribute resources across high- and low-income groups. In the case of Canadian immigrants, when looking at only the effect of socio-economic influences on psychological distress, some groups of long-term immigrants show higher level of psychological distress than recent immigrants. But this mental health gap disappears when secondary social determinants are considered. However, social support and interpersonal strain as secondary social determinants do not simply replace the primary social determinants in producing psychological distress. If it is a straightforward case of replacement, we would observe roughly the same amount of explained

variance. But the findings show that the explained variance increased from 9.63% to 26.78%. This shows that, as primary social determinants of health (socio-demographic or socio-economic inequalities) translate into secondary social determinants (social support and interpersonal strain), their effect on mental health becomes greater.

In order to reduce health inequalities among immigrants, relevant health policy interventions should address institutional barriers that block immigrants from seeking social support rather than stressing help-seeking as an individual effort. For example, Canadian immigrants migrating during 1990s suffer from the state restructuring and lost settlement services that were otherwise available to them (Arat-Koc, 1999). Twenty years later, we observe that immigrants migrated at and lived through those periods, are now having higher psychological distress and worse self-rated mental health.

Welfare retrenchment widens health inequalities because it strengthens the link between primary social determinants and its production of health benefits and health risks. Wealthier immigrants can have greater access to social services while others can rely on self-help. A successful health policy intervention would not simply advocate immigrants to attend more community events, but to ensure channels for social connections remain open for them.

7.3 The "how" question: Stress proliferation in the context of migration

In the previous discussion, this study shows that psychosocial resources (social support) and psychosocial demands (interpersonal strain) are the major social determinants of mental health for Canadian immigrants. In this section, I use the Stress Process Model to explain mechanisms in which the negative effect of migration on mental health channel through social support and interpersonal strain.

According to the Stress Process Model, mental health inequalities are caused by differential exposure to stressors, which are derived from status differences (Aneshensel, 2009). The research of Noh and Avison (1996) was the first to use Pearlin's Stress Process Model to study immigrants' psychological distress. They suggest that the Stress Process Model is applicable to immigrants. However, their study exclusively focuses on Korean immigrants in Canada. It is still relatively unclear if various components of the Stress Process Model, such as social support or interpersonal conflicts, can be applied to immigrants more generally.

My study finds that status variation among immigrants--recent versus long-term status--contributes to different levels of social support and interpersonal strain. The status variations in resources and strain further translate into psychological distress, positive mental health, or self-rated mental health. The following discussions will elaborate this stress process further.

7.3.1 Status variation in social support and interpersonal strain: the pathways to mental health deterioration

My analysis supports the hypothesis that long-term immigrants have higher social support than recent immigrants, except for long-term immigrants living in Canada for only 10 to 19 years. However, years of residence in Canada and social support are not entirely linear. Some cohorts of long-term immigrants have stronger social support than the others. For example, immigrants living in Canada for 30 to 39 years or 40 to 49 years (who migrated between 1970 and 1980) have the strongest social support. And generally speaking, immigrants migrating before 1980 have stronger social support. After the 1980s, it became harder for immigrants to build social support, as family sponsorship became more restricted and costly. Given that immigrants typically rely on family members for support, it is unsurprisingly that those who

migrated between 1980 and 1990 have the lowest social support, though they have lived in Canada for 20 to 29 years.

With respect to interpersonal strain, all groups of long-term immigrant experience significantly higher level of interpersonal strain than recent immigrants. Again the relationship between years of migration and interpersonal strain is not linear. Some groups of long-term immigrant experience higher interpersonal strain than others. Recent immigrants have the lowest interpersonal strain, and there are some fluctuations in interpersonal strain across immigrant cohorts.

Immigrant cohorts living in Canada for 10 to 19 years and 20 to 29 years are perhaps the most disadvantaged long-term immigrant groups in psychosocial resources. Immigrants living in Canada for 10 to 19 years do not have significantly more social support than the recent ones, yet they have significantly higher interpersonal strain. For immigrants living in Canada for 20 to 29 years, their social support is lower than their previous cohorts, but their level of interpersonal strain is the second highest. These are signs that immigrants' psychosocial resources decrease after migration, and that the broader socio-historical context does not enhance it.

One important finding to note is that minority status is not significant in any of my previous social determinants of health models, where mental health measures are outcomes. However, when social support is the dependent variable, minority status becomes a significant predictor. Further to this finding is that immigrants from China, Hong Kong, and Taiwan have the lowest social support compared to immigrants from other sending countries. Immigrants from other Asian countries also score significantly lower in social support. Immigrants from other countries do not have significantly lower social support than British immigrants. Previously, I mentioned that immigrants from China, Hong Kong, and Taiwan are predominantly economic immigrants.

Although higher household income is generally associated with better support (as is the case in my model), being in the highest household income family does not fully negate the disadvantages of coming from China, Hong Kong, and Taiwan, on social support. For example, being in the highest household income group is associated with a 0.13 unit increase in social support, but it does not fully reduce the 0.17 of decrease in social support attached to coming from China, Hong Kong, and Taiwan.

The effect of sending countries on interpersonal strain is quite a different pattern. British immigrants have significantly higher interpersonal strain than immigrants from various other countries, including the U.S., South and Central America, Caribbean, Italy, China, Hong Kong, and Taiwan, and India. Immigrants from China, Hong Kong, and Taiwan, however, have both lower social support and interpersonal strain. Given that social support and interpersonal strain are important pathways to health deterioration, future migrant health research should investigate why some ethnic groups experience more interpersonal strain or have less social support than others.

7.3.2 The stress process: status variation, psychosocial resources, and psychological outcomes

The relationships between years of migration and psychosocial resources investigated above indicate that, compared to recent immigrants, long-term immigrants are in the state of 'higher support and higher strain.' Social support and interpersonal strain are countervailing forces on mental health. Previous research suggest that native-born Asian Americans have worse mental health than their immigrant peers because the higher social support they receive does not suppress the negative effects of perceived discrimination and family conflict on depression and anxiety (Lau, Tsai, Shih, Liu, & Hwang, 2013). Based on my findings, immigrants' recent versus

long-term status variation in interpersonal strain translate into differences in psychological distress, positive mental health, and self-rated mental health.

Interpersonal strain, the hypothesized mediator, does explain the deteriorated patterns of psychological distress and positive mental health for Canadian immigrants, but it is not the case for self-rated mental health. Nonetheless, the inclusion of interpersonal strain, reduces but does not fully diminish the gap in self-rated mental health. This indicates partial mediation. The mediation effects of interpersonal strain on psychological distress and positive mental health are stronger than it is for self-rated mental health.

Social support, the hypothesized suppressor, operates in an expected direction: when it is included in the model, the gap in mental health between recent and long-term immigrants widens (particularly for immigrants living in Canada for 20 to 29 years). This means that, were it not for their higher level of social support, this particular group of long-term immigrant would have had higher psychological distress, worse positive mental health, and lower self-rated mental health than their recent peers. There is also some suppression effect for long-term immigrants living in Canada for 10 to 19 years, but it is not as strong because this group of immigrants does not have significantly higher social support than the most recent immigrants. In addition to being a suppressor, social support also buffers the negative effect of interpersonal strain on psychological distress and positive mental health. Nevertheless, there is no interaction between interpersonal strain and social support on self-rated mental health.

7.3.3 The countervailing effects of interpersonal strain and social support on mental health

Previous studies have not reached full consensus on the relative importance of interpersonal strain and social support on mental health (Finch et al., 1999). Some studies find interpersonal strain has a stronger effect on negative well-being than social support, and vice versa, (Finch et

al., 1999; Okabayashi et al., 2004), while others have found both interpersonal strain and social support have equivalent effects on both positive and negative well-being (Cheng, Leung, & Chan, 2011). Given that empirical investigations of the countervailing effects of positive and negative social exchanges largely focus on older adults in care relationships (Cheng et al., 2011; Okabayashi et al., 2004) or college student samples (Finch et al., 1999), it would be premature to assume that the effects of interpersonal strain and social support on immigrants' mental health are similar.

My results show that the relative importance of interpersonal strain or social support on mental health is domain-specific. Based on the Canadian immigrant samples, the adverse effect of interpersonal strain on psychological distress is stronger than the salutary effect of social support. Quite the contrary, social support has a stronger beneficial effect on positive mental health than the deleterious effect of interpersonal strain.

Returning to my previous point that Chinese immigrants have relatively low social support and low interpersonal strain, whereas British immigrants score high on both domains. This might suggest that immigrants are not in a position to filter out negative social interactions from positive ones. Previous research finds that native-born Asian Americans report high family conflicts and strong family support simultaneously (Lau et al., 2013). Akiyama et al. (2003) offer a possible interpretation that captures the dilemma of immigrants: role-specific negative interactions among family members impact the entire network. For immigrants, status-based stress, such as feeling like or being perceived as a foreigner, can increase role-based stress, such as being a parent. For example, in her fieldwork, Epsiritu (2003:165) finds that Filipinas in the U.S. have a negative image where they are viewed as 'dangerous prostitutes' or 'submissive mail-order brides.' This kind of minority stress can increase young Filipinas' conflict with their

parents, who worry that their daughters' sexual autonomy will reinforce the negative image of their ethnic communities.

One major limitation of this study is that CCHS-MH 2012 does not measure sources of social support or interpersonal strain. This specific piece of information matters for the following reasons: First, it is generally found that receiving support from non-ethnic or non-kin ties reduces depression, while receiving ethnic support over time increases it (Gellis, 2003). Second, it matters to know whether interpersonal strain occurs with family members or non-ethnic members. Based on the current research, we know that it is necessary to reduce interpersonal strain and increase social support. But how can we achieve this without locating the source of stressful social interactions? Previous studies suggest that long-term immigrants react to racial discrimination more strongly (Goto, Gee, & Takeuchi, 2002). One way to cope with this unwanted situation is to avoid people and places where negative social interactions occur. This coping eventually results in social isolation and reduced social support. If this is the case, reducing racial discrimination is a good way of encouraging social integration. Nonetheless, if stressful interactions are coming from family members, which is a likely scenario given that immigrant children and parents acculturate at difference paces, more institutional support should be offered to immigrant families. Another major reason that institutional support is welcomed is due to the age structure of the immigrant population. Currently, around 30% of immigrants are older adults, who are mostly sponsored by family members. Canadian immigrant policies exclude sponsored family immigrants from public support (Kaida & Boyd, 2011). This leaves older immigrants no choice but to depend on family members, often spiraling into strained conditions where positive and negative social interactions pervade the entire kin network.

7.4 Developmental contexts matter: The effect of age at migration on psychosocial resources and mental health

Extant migrant health literature emphasizes the effect of generation status on immigrants' health behavior and health outcomes (Acevedo-Garcia et al., 2005). Immigrant generation is conceptualized as an indicator of assimilation, and empirical research generally supports that higher immigrant generations (2^{nd} or 3^{rd+}) exhibit more risk-taking health behaviors and worse physical or mental health (Acevedo-Garcia et al., 2005; Creighton, Golman, Pebley, & Chung, 2012; Gordon-Larson et al., 2003; Guarini, Marks, Patton, & Coll, 2015; Salas-Wright et al., 2014; Hamilton, van der Mass, Boa, & Mann, 2014), with a few exceptions suggesting the opposite (Lara-Cinisomo, Xue, & Brooks-Gunn, 2013; Stefanek, Strohmeier, Fandrem, & Spiel, 2012).

Discussions of generational effect on mental health often exclude intra-generational differences based on the timing of migration, with a few exceptions (Harker, 2001; Salas-Wright et al., 2014). I suggest that intra-generation mental health differences based on age at migration cannot be ignored, since previous studies indicate that childhood and teenage immigrants show poorer mental health in adulthood (Das-Munshi et al., 2013; Gong et al., 2011; Takeuchi et al., 2007).

Multiple reasons account for immigrant youth's weaker mental health profile include: childhood adversity (Das-Munshi et al., 2013), lack of strong motivations for migration (Gong et al., 2011), sense of social isolation and meaninglessness (Safipour, Schopflocher, Higginbottom, & Emami, 2011), higher exposure to interpersonal strain (Lau et al., 2013; Stefanek et al., 2012), lack of physical activity and social participation (Brandon, 2008) and increased risk-taking behaviors for immigrant youth (Frank, Cerda, & Rendon, 2007; Kulis, Marsiglia, & Nieri, 2009).

The study of Salas-Wright et al. (2014) finds that compared to adult immigrants, childhood immigrants are more likely to develop substance use disorders. Kimbro (2009) suggests that the relationship between age at migration and smoking is monotonic, with younger age at migration being more likely to smoke. My study continues this discussion by considering multiple health behaviors and their association with age at migration. In Chapter 2, I hypothesized that childhood and teenage immigrants have higher odds of having worse health behaviors—including drinking, smoking, and substance use—than adult immigrants. In addition to health behavior, I hypothesized that migration in childhood or adolescence is associated with both stronger social support and stronger interpersonal strain than migration in adulthood. Together these three hypotheses help us understand the behavioral and psychosocial dimensions associated with age at migration.

Currently, few studies investigating the healthy immigrant effect consider the developmental contexts, ignoring the effect of age at migration on social integration and experiences of acculturation (Kulis et al., 2009; Takeuchi et al., 2007). Takeuchi et al. (2007) suggest that immigrant youth interact with more social groups and institutions than adult immigrants, thereby exposing them to more interpersonal stressors. On the other hand, Lau et al. (2013) argue that despite the experience of higher interpersonal strain, growing up in the country of destination helps strengthen social support.

Life course perspectives and the Stress Process Model are the guiding frameworks for the following analysis. Pearlin and Skaff (1996) argue that by focusing on the timing and sequencing of events, life course perspectives can shed light on individuals' appraisal of stressors. Kulis et al. (2009) suggest that adolescence as a peer-dominant developmental stage is a critical time for immigrant children to experiment substance use. In their study, it is found that immigrant

children experiencing higher acculturation stress and perceived discrimination are more likely to use substances (Kulis et al., 2009).

For this study, I investigated if the age at migration is associated with worse health behavior, and whether or not it translates into higher psychological distress. I also investigated the effect of age at migration on social support and interpersonal strain, and asked if its effect on these psychosocial resources and demands translate into psychological distress.

7.4.1 The effect of age at migration on health behavior, psychosocial resources, and psychosocial demands

The results indicate that age at migration has a direct effect on psychological distress. Compared to immigrants who migrated in adulthood, childhood and teenage immigrants experience an elevated level of psychological distress. The following discussion focuses on pathways to differences in psychological distress based on age at migration.

My analysis shows that younger age at migration is associated with lifetime drug use. Compared to adult immigrants arriving in Canada between 22 and 30 years old, migrating before age 21 is associated with greater odds of drug use. However, the risks of drug use are not equivalent for childhood and teenage immigrants. In contrast to migration in adulthood, migrating before 8 years old is associated with 4.19 times higher odds of drug use, between 9 to 13 years old the odds are 3.33 times higher, and between 14 and 21 years old the odds are 1.93 higher. But younger age at migration is not associated with more drinking or smoking, contrary to studies finding such a difference (Kimbro, 2009). The hypothesis that younger age at migration is associated with higher odds of smoking and drinking is unsupported by my study. Also noteworthy is that years of migration has no association with risks of drug use when

controlling for age at migration, thereby suggesting that age at migration is a better indicator for behavioral assimilation than length of migration.

Nonetheless, the results indicate that only migration in childhood is associated with stronger social support. Length of migration has no association with social support. Results on the association between age at migration and interpersonal strain, however, is significant, supporting the hypothesis that younger age at migration is associated with higher interpersonal strain. Compared to adult immigrants arriving at Canada between 22 and 30 years old, childhood and teenage immigrants both experience higher levels of interpersonal strain. Migrating before 8 years old is associated with the highest degree of interpersonal strain.

In short, the above findings indicate that younger age at migration is associated with more risk factors than protective factors. The following discussion considers if these risk factors have both direct and indirect effects on the focal association between age at migration and psychological distress.

7.4.2 Age at migration and the stress process

My analysis shows that childhood and teenage immigrants experience higher psychological distress in adulthood, supporting previous research (Das-Munshi et al., 2013; Gong et al., 2011; Takeuchi et al., 2007). Another important finding of this study is that length of migration does not account for psychological distress when controlling for age at migration. When socio-economic conditions, health behavior, social support and interpersonal strain are controlled for, childhood and teenage immigrants still experience higher psychological distress. This further shows that there are factors accounting for childhood immigrants' psychological distress not included in the model. One of said factors is other psychosocial resources, including ethnic identity, racial discrimination, and sense of mastery and self-esteem, which are frequently cited

as correlates of youth's mental health (McGee & Williams, 2000; Wakefield & Hudley, 2007; Vieno, Santinello, Pastore, & Perkins, 2007; Wong, Eccles, & Sameroff, 2003).

Previous studies suggest that childhood and teenage immigrants have better economic integration (Bleakley & Chin, 2004; Myers, Gao, & Emeka, 2009). However, controlling for socio-demographic and socio-economic differences, childhood immigrants still have higher psychological distress than adult immigrants. The coefficient between age at migration and psychological distress remains almost the same for immigrants arriving in Canada before age 8, while it reduces more visibly for those migrating between the ages of 9 and 13.

After health behavior is adjusted, the coefficient between age at migration and psychological distress reduces greatly for immigrants arriving in Canada before age 8 and between ages 9 and 13. This suggests that drug use mediates the association between age at migration and psychological distress for these two groups. Interpersonal strain also mediates this focal association. Accounting for the effect of interpersonal strain, migration between 9 and 13 has no effect on psychological distress, which means that the negative effect of younger age at migration is fully routed through the factor of interpersonal strain. Both the hypotheses that health behaviors and interpersonal strain act as mediators between age at migration and psychological distress are supported.

However, the suppressing effect of social support is limited, as it does not fully reduce the effect of migration on psychological distress in adulthood. In the final model, only very long-term duration of migration (50 years and above) has negative effect on psychological distress, suggesting that age at migration (development contexts) has stronger effect on psychological distress than duration effect (years of migration).

7.4.3 Conclusion

Migration as a life event has different emotional consequences for adults and children. Childhood is a period where forming peer-dominant relationship is the major developmental task. It is a period of high rates of substance use initiation (Kulis et al., 2009). Migration in childhood puts immigrant children at greater risks of substance use because they might perceive substance use as a way to garner attention from their peers. This study finds that drug use and interpersonal strain are two major mediators for the relationship between age at migration and psychological distress. Interpersonal strain is the major reasons for immigrant children to experience higher psychological distress in adulthood. Future research should pay attention to immigrant children's experiences of social inclusion and coping strategies.

7.5 Concluding Remarks: policy implications, research limitations, and future research

As previously stated, sociological approaches to mental health stress the non-pathological aspects of emotions, and emphasize experiencing negative emotions as universal suffering. My dissertation is rooted in sociological traditions, and therefore I opted not to use cut-off points to estimate the prevalence of clinical distress. I maintained the use of dimensional assessment option of K10 in order to capture any increase or decrease in depressive symptoms of immigrant populations, and to avoid labelling non-clinically distressed immigrants as ‘mentally healthy.’ I also used self-rated mental health and positive mental health as complementary measures to study the other domains of mental health not captured by K10. The use of multiple mental health measures is desirable, as immigrants do not show consistent psychological patterns across mental health domains.

As stated in the literature review, studies investigating the healthy immigrant effect compares the existence of such an effect across age groups and ethnic groups, but they do not address the 'what' and the 'how' questions. Instead of pursuing the question of 'does the healthy immigrant effect exist for mental health among Canadian immigrants?', I emphasized the need to identify the social determinants shaping immigrants' mental health (what are the social determinants for Canadian immigrants' mental health?), and to understand how these social determinants—be they protective or harmful—are unequally distributed among recent and long-term immigrants (how are these social determinants distributed?).

In this dissertation. I use three sociological theoretical approaches to study the mental health of the immigrant population. First, I used the social determinants of health approach in order to identify the major structural determinants of immigrant's mental health. Second, I employed the Stress Process Model to investigate if long-term immigrants have more exposure to interpersonal strain and more accumulative advantages to social support. The goal here was to understand if differential exposure to risks and accumulation of resources could explain away the healthy immigrant effect in mental health. Finally, I used life course perspectives to study the effect of younger age at migration on mental health, accounting for current age differences and length of migration. The effect of age at migration on mental health is a less studied area in migration health research, as sociologists of migration have traditionally used economic and educational outcomes as indicators of social integration. But I have argued earlier that health is essential to social integration as lack of health affects productivity and interpersonal relationships.

When immigrants come to Canada, we do not want them to merely be 'non-distressed' or 'non-suicidal.' Rather, we want Canadian immigrants' mental health to flourish. The current

research trend focusing on mental disorders in the immigrant population is heavily influenced by the mental illness treatment approach, which emphasizes medical intervention when severe mental illness occurs. This is not a preventive practice. My dissertation suggests that health promotion requires identifying major social determinants essential to immigrants' mental health. For example, my results indicate that social support and interpersonal strain, respectively, are the most beneficial and detrimental to mental health. More importantly, social support and interpersonal strain influence each of the psychological outcomes I examined, including self-rated mental health, psychological distress, and positive mental health. This means that by improving immigrants' psychosocial resources and reducing psychosocial demands, immigrants would experience growth in several domains of mental health. As revealed by my dissertation, social support and interpersonal strain are both major social determinants of mental health and pathways to mental health deterioration in the case of Canadian immigrants.

My dissertation, however, was only able to investigate social support and interpersonal strain as particular psychosocial resources and demands. There are important psychosocial resources and demands warranting further investigation, including self-esteem, sense of mastery, ethnic identity, and discrimination. Additionally, social support and interpersonal strain occur in interpersonal settings. The measures of social support and interpersonal strain do not contextualize the settings where beneficial social ties are mostly likely to form or where negative social interactions happen. They also do not include sources of support and strain. For example, do immigrants experience most of the interpersonal conflicts in their families, ethnic communities, or workplaces? Do immigrants rely on co-ethnics for social support? Are there any emotional consequences for immigrants who felt restricted to use ethnic support? Without this piece of information, there are no well-defined target audience for health policies to direct their

attention to. Furthermore, interpersonal strain measures in CCHS-MH 2012 does not include the dimension of duration. It is, therefore, impossible for researchers to evaluate the chronicity of the interpersonal strain for immigrants. Current healthy immigrant literature, however, rarely includes psychosocial resources in studying immigrants' mental health (except for a few exceptions, Lau et al., 2013; Wu & Schimmele, 2005). In terms of the role of psychosocial demands on mental health, interpersonal stress is not emphasized enough in migration health research compared to the emphasis on racial discrimination. Interpersonal stress and various forms of discriminations are, however, most likely coming from different sources. These two forms of psychosocial demands also interact, and psychosocial resources do not buffer the negative effect of psychosocial demands on mental health (my dissertation finds no buffering effect of social support on the relationship between years of migration and all of the psychological outcomes I investigated).

In addition, it is important to note that for different ethnic groups, social support and interpersonal strain might not operate as pathways to mental health deterioration. When immigrants are grouped as a whole, length of migration has an average positive effect on social support and interpersonal strain, but some ethnic groups, especially those who are minority in numbers, might have problems building social support. In the future, researchers should focus on specific ethnic groups and explore how various forms of psychosocial resources and demands influence their mental health.

My dissertation shows that health behaviors and social conditions co-influence immigrants' mental health to some extent. Health behaviors do have independent contributions to mental health, which cannot be explained by immigrants' social locations, but the contributions are small. Socio-demographic and socio-economic conditions make unique contributions to

immigrants' mental health, but psychosocial resources and demands have the greatest impact. Health policies that emphasize health literacy are important, but there is an emphasis on individual responsibilities to maintain health. The structural constraints that immigrants face to promote mental health are not adequately addressed in healthy literacy policies. For example, it is important to have an active lifestyle and it does reduce stress. But for immigrants who experience severe interpersonal strain, having an active lifestyle does not eliminate the sources of the strain. Immigrants perhaps also believe that it is their personal responsibility to reduce family conflicts, but they might not be aware of how structural contexts, such as resentments toward immigrant groups, translate into interpersonal strain. Health policies should help immigrants be aware of the link between interpersonal stress and minority-related structural conditions, so that immigrants experience less self-blame and reduced self-efficacy.

My dissertation finds that childhood immigrants, especially those who migrated to Canada prior to age 8, are especially mentally vulnerable when they reach adulthood. Higher levels of substance use and interpersonal strain do not fully explain why migration in this particular age range has a more profound effect on mental health. One possible explanation is that parents who migrated with pre-school children are more likely to experience parental stress compared to those with older children. Life course perspectives emphasize the role of 'linked lives' on health (Burton & Whitfield, 2006). It is possible that immigrant parents' stress levels interact with their children's, creating stress-proliferating situations. Current literature on the healthy immigrant effect tends to focus on individuals as units of analysis; however, life course perspectives argue that the health of each family member is connected. For example, Burton and Whitfield (2006) argue that the stress of family poverty proliferates in other areas of family life, including interpersonal and psychosocial domains, and affect all family members throughout the life

course. Moreover, studies on the healthy immigrant effect do not consider the cumulative effects of immigrants' poverty, employment frustrations, or prolonged interpersonal stress on mental health. My dissertation is based on surveys of cross-sectional design, so it is unable to address the issue of cumulative disadvantage. The result that migration in childhood has profound emotional consequences might be an indication that immigrant children migrating to Canada have accumulated some health risks during childhood. In the future, researchers using longitudinal study designs should investigate which types of health risks are more accumulative for immigrant children and whether or not these cumulative health risks translate into worse mental health in adulthood.

My dissertation research suffers from limitations inherent in cross-sectional designs, which is to isolate the confounding influences of age, cohort, and period effect on mental health. The age, period, and cohort effect (APC) problem is an ongoing one. These three time-related variables are linearly depended (Period – Age = Cohort), and thus causing the 'identification problem' (Glenn, 1976; Reither et al., 2015). The identification problem varies based on research designs, however. The identification problem inherent in my dissertation lies in its inability to distinguish the cohort effect from the age effect. Based on my findings, immigrants who migrated in 1980s or 1990s experienced aging in Canada, and as a result their mental health deterioration could potentially stem from the aging process. The other possibility is that the period effect (economic recession and state restructuring) was experienced differentially by immigrant cohort based on the racial composition and human capital characteristics, which reflects in the mental health differences.

Ryder's (1965) original concept of cohort refers to 'birth cohort,' which emphasizes the effect of formative years on later life trajectories. Nonetheless, current studies tend to treat

immigrant cohorts as those who migrated in the same period, ignoring the early life experience of immigrants in their home countries (Aydemir & Skuterud, 2005; Borjas, 1995). This approach is flawed as health is the outcome of cumulative disadvantages, which begins prior to migration. To disentangle age, period and cohort effects requires the use of both cross-sectional and longitudinal data, or the hierarchal age, period, and cohort (HAPC) analysis, treating age as fixed effect and period/cohort as random effect (Frenk, Yang, & Land, 2013). For example, using HAPC analysis, researchers could treat age as an individual-level variable and period/cohort as context-level variable, and compares if the period effect, such as economic recession, impacts immigrants from non-traditional source countries more than those from European countries.

Appendix A Complete descriptive statistical tables for the Canadian samples

Table 4.1(continued) Sample descriptions (CCHS-MH 2012), all Canadian samples

Explanatory Variable	
Nativity Status	Proportion (weighted), total=100%
Canadian-born (reference group)	74.85%
Foreign-born with a migration history of 0-9 yrs	6.61%
Foreign-born with a migration history of 10-19 yrs	5.89%
Foreign-born with a migration history of 20-29 yrs	4.38%
Foreign-born with a migration history of 30-39 yrs	2.38%
Foreign-born with a migration history of 40-49 yrs	2.88%
Foreign-born with a migration history >50 yr	2.62%
Control Variable	
Race/Ethnicity	Proportion (weighted), total=100%
White(reference group)	76.94%
Black	2.21%
Filipino	2.01%
Chinese	3.91%
South Asian	4.34%
Latino	1.55%
Mixed race/multiple ethnic origins	1.30%
Other minorities (single race/ethnicity)	4.37%
Linguistic minority	Proportion (weighted), total=100%
English or French	80.08%
English or French, & other	11.34%
Other only	8.58%
Gender	Proportion (weighted), total=100%
Male	49.19%
Female	50.81%
Age	Proportion (weighted), total=100%
15-18 years old	6.49%
19-24 years old (reference group)	9.31%
25-34 years old	15.88%
35-44 years old	16.82%
45-54 years old	18.46%
55-64 years old	15.82%
> 65 years old	17.22%
Household type	Proportion (weighted), total=100%
Couple only	27.88%
Couple with one child <25 or >=25	36.60%
Single and unattached	18.98%
Extended family	5.73%
Female lone family	7.92%
Other types	2.89%
Education	
<high school	18.11%
High school	15.81%
Some post-secondary education	7.09%
Trade certificate	11.76%
College/university certificate	24.53%
Bachelor's degree	15.38%

> Bachelor's degree	7.32%
Household income level	
Lowest	27.16%
Lower-middle	26.33%
Upper-middle	23.25%
Highest	23.26%
Work status-1	
Currently working	59.39%
Not working	31.81%
Permanently unable to work	2.54%
Retired	6.26%
Work status-2	
Full-time	52.88%
Part-time	11.17%
School/domestic responsibility/retirement	35.95%
Response Variable	
Self-rated mental health	Proportion (weighted), total=100%
Poor to fair (reference group)	7.79%
Good	27.01%
Very good	40.18%
Excellent	25.02%
Psychological distress	0-40
Mean	5.27
Medium	4.00
Standard deviation	.06
Positive mental health	0-70
Mean	54.24
Medium	56.00
Standard deviation	.011

Table 4.3 (continued) Sample descriptions (GSS-SI 2014), all Canadian samples

Explanatory Variable	
Nativity Status	Proportion (weighted), total=100%
Canadian-born (reference group)	76.64%
Foreign-born with a migration history of 0-9 yrs	5.93%
Foreign-born with a migration history of 10-19 yrs	5.42%
Foreign-born with a migration history of 20-29 yrs	3.72%
Foreign-born with a migration history of 30-39 yrs	2.56%
Foreign-born with a migration history of 40-49 yrs	2.99%
Foreign-born with a migration history >50 yr	2.75%
Response Variable	
Self-rated mental health	Proportion (weighted), total=100%
Poor to fair (reference group)	6.06%
Good	20.82%
Very good	37.87%
Excellent	35.25%
Subjective well-being	
Mean	7.88
Median	8.00
Standard Deviation	.002
Control Variable	
Race/Ethnicity	Proportion (weighted), total=100%
Canadian (reference group)	9.41%
British	5.09%
French	7.17%
Scottish	2.00%
Irish	2.27%
German	2.52%
Italian	2.35%
Aboriginal	1.59%
Ukraine	1.17%
Chinese	3.20%
Dutch	1.23%
Polish	0.98%
Other European	5.79%
South Asian	4.24%
Other single race/ethnicity	7.77%
Multiple origins	43.21%
Linguistic minority	Proportion (weighted), total=100%
English or French	86.51%
English or French, and other	4.68%
Other only	8.81%
Gender	Proportion (weighted), total=100%
Male(reference)	
Female	
Age	Proportion (weighted), total=100%
15-17	6.49%
18-24(reference)	9.31%
25-34	15.88%
35-44	16.82%
45-54	18.46%

55-64	15.82%
>=65	17.22%
Household type	Proportion (weighted), total=100%
Couple only	27.30%
Couple with a single child < 25 or >=25 years old	30.66%
Unattached	13.07%
One parent with a single child < 25 or >=25 years old	4.00%
Respondent living with two parents	13.78%
Respondent living with one parent	3.81%
Other types	7.39%
Income levels	Proportion (weighted), total=100%
<29,999	14.12%
30,000-59,999	24.26%
60,000-99,999	26.35%
>100,000	35.27%
Education	Proportion (weighted), total=100%
Less than high school	14.90%
High school	26.73%
Trade certificate	8.17%
College/non-university certificate	20.03%
University certificate	3.65%
Bachelor's degree	17.48%
Graduate degree	9.04%
Main activity	Proportion (weighted), total=100%
Working	56.03%
Job seeking	2.22%
School	12.50%
Domestic responsibility	6.73%
Retired	18.74%
Unable to work	2.06%
Other activities	1.72%
Place of residence	Proportion (weighted), total=100%
1st tier immigrant cities	35.77%
2nd tier immigrant cities	14.56%
3rd tier immigrant cities	4.93%
Other cities	44.74%

Appendix B Complete models for the nativity effect on mental health

Table 5.1 (Continued) The effect of nativity on psychological distress, positive mental health, and self-rated mental health (N=25,113)

Variable	Model 1 (Distress)	Model 2 Distress)	Model 3 (PMH)	Model 4 (PMH)	Model 5 (MH)	Model6 (MH)
Migration					(odds ratio)	(odds ratio)
Canadian-born	------	-----	------	-----	------	-----
0-9 years	-.080***	-.061**	.110***	.049	1.632***	1.759***
10-19 years	-.055**	-.010	-.010	-.081	1.208**	1.055
20-29 years	-.080**	-.010	.084	.023	.883	1.054
30-39 years	-.144***	-.053	.179***	.117*	1.010	1.068
40-49 years	-.146***	-.035	.169***	.082	.885	1.074
50 years and more	-.125***	-.007	.059	-.026	1.066	.948
Females (Males=0)		.047***		.016		.853***
Age range						
19-24		-----		-----		------
15-18		-.009		.140***		1.212
25-34		-.040**		-.030		.889
35-44		-.044**		-.027		.791*
45-54		-.095***		-.010		.756*
55-64		-.147***		.059		.923
65 and above		-.250***		.239***		1.413***
Household types						
Couples only		------		-------		-----
Couples with (adult) children		-.030**		.078***		1.127*
Single/unattached		.057***		-.142***		.741***
Extended		-.020		.094*		.959
Female lone parent		.043*		-.050		.956
Other types		.040		-.147**		.846
Income adequacy						
Lowest		-----		------		-----
Lower-middle		-.039***		.058**		1.340***
Upper-middle		-.056***		.070**		1.422***
Highest		-.100***		.147***		1.742***
Education						
Less than high school		-----		-----		-----
High school		-.031*		.033		1.315*
Some post-sec.		.051**		-.035		1.238*
Trade certificate		-.010		.044		1.119
College/university certificate		-.001		.023		1.206*
Bachelor's degree		-.016		.107***		1.315***
Above bachelor's degree		-.007		.109**		1.636***
Work status						
Currently working		------		-----		-----
Not working		.040*		-.080*		.878*
Permanently unable to work		.329***		-.658***		.218***
Retired or above working age		.024		-.066		.733*
Full-/Part-time job status						
Full-time		-------		------		-----
Part-time		.034**		-.070**		.878*
Family/school/retirement		.001		-.042		.891
Race & Ethnicity		.137				
White		-----		-----		------
Black		-.056		.126		1.345
Filipino		-.068		.265***		1.475
Chinese		-.068**		-.126*		.711*
South Asian		-.044		.181***		1.003
Latin American		-.035		.061		.789
Multiple origin		-.043		-.017		1.128
Aboriginal		.038		-.020		.883
Other minority		.028		-.036		.848
Linguistic minority						
English/French		-----		------		------

English/French/Other		-.053***		.116***		1.452***
Other		-.089***		.081*		1.152
Place of residence						
1st-tier immigrant receiving city		------		------		------
2rd-tier immigrant receiving city		.003		.027		.880*
Other cities		-.015		.095***		.880
Constant	.640***	.746***	3.852***	3.706***		.872**
Adjusted R^2	1.316%	9.682%	0.416%	6.339%		------
Cut1					-2.714***	-2.376***
Cut2					-.972***	-.445***
Cut3					.642***	1.355***

*p<0.05. **p<0.01 ***p<0.001

*Control variables include gender, age, race and ethnicity, linguistic minority, household types, household income, education, work status, and place of residence.

Cut 1=Poor to fair versus good very good excellent

Cut 2=Poor to fair good /very good excellent

Cut 3= Poor to fair good very good /excellent

Table 5.4 (Continued) The effect of nativity on subjective well-being and self-rated mental health (GSS-SI 2013) (N=27.694)

Variable	Model 1 (SWB)	Model 2 (SWB)	Model 3 (MH)	Model 4 (MH)
Migration			(odds ratio)	(odds ratio)
Canadian-born	------	-----	------	-----
0-9 years	.023	.040*	1.632***	1.649***
10-19 years	.013	.034*	1.208**	1.241**
20-29 years	-.018	.002	.883	.919
30-39 years	.028	.030	1.010	1.018
40-49 years	.005	-.019	.885	.860
50 years and more	.071***	.031	1.066	1.084
Females (Males=0)		.013*		.884***
Age range				
19-24		-----		-----
15-18		.067**		1.388**
25-34		-.039*		.872
35-44		-.058**		.817
45-54		-.035		.862
55-64		-.015		1.014
65 and above		.049*		1.203
Household types				
Couples only		------		-------
Couples with (adult) children		.001		1.094*
Single/unattached		-.091***		.867***
One parent with single (adult) child		-.137***		.849*
Respondent living with two (elderly) parent		-.124***		.854
Respondent living with one (elderly) parent		-.118***		.825
Other arrangements		-.100***		.799***
Income adequacy				
<29,999		-----		------
30,000-59,999		.035**		1.093
60,000-99,999		.061***		1.240***
>100,000		.094***		1.368***
Highest				
Education				
Less than high school		-----		-----
High school		.009		1.202***
Trade certificate		-.012		1.230**
Non-university certificate		.015		1.457***
University certificate		.022		1.783***
Bachelor's degree		.026*		1.660***
Above bachelor's degree		.020		2.763***
Work status				
Currently working		------		-----
Job seeking		-.136***		.671**
School		.008		1.061
Domestic responsibility		-.018		.917
Retired		.001		.859**
Permanently unable to work		-.353***		.236***
Other activity		-.117***		.620***
Race & Ethnicity				
Canadian		-------		------
English		-.000		.701***
French		.012		1.000
Scottish		.039		.781*
Irish		.021		.847
German		.018		.798*
Italian		-.029		.702**
Aboriginal		.026		.720
Ukraine		-.037		.531***
Chinese		-.088***		.473***
Dutch		-.014		.940
Polish		.029		.788
Other European		-.013		.727***
South Asian		.023		.753

Other single origins		.010		.855
Multiple origins		-.029**		.700***
Linguistic minority				
English/French		-----		-----
English/French/Other		-.013		.990
Other		-.005		.886
Place of residence				
1st-tier immigrant receiving city		-----		------
2rd-tier immigrant receiving city		.008		.954
3rd-teir immigrant receiving city		.017		.947
Other cities		.026***		.943
Constant	2.777***	2.770***		
Adjusted R^2	0.137%	6.777%		
Cut1			-2.714***	-2.821***
Cut2			-.972***	-1.023***
Cut3			.643***	.641***

*p<0.05. **p<0.01 ***p<0.001

*Control variables include gender, age, race and ethnicity, linguistic minority, household types, household income, education, main activity, and place of residence.

Cut 1=Poor to fair versus good very good excellent

Cut 2=Poor to fair good /very good excellent

Cut 3= Poor to fair good very good /excellent

References

Abe-Kim, J., Takeuchi, D., Hong, S., Zane, N., Sue, S., Spencer, M. S., Appel, H., Nicdao, E., and Alegria, M. (2007). Use of mental health–related services among immigrant and US-born Asian Americans: Results from the National Latino and Asian American Study. *American Journal of Public Health*, *97*(1): 91–98.

Abdulrahim, S., James, S. A., Yamout, R., Baker, W. (2012). Discrimination and psychological distress: Does whiteness matter for Arab Americans?. *Social Science & Medicine*, *75*(12): 2116-2123.

Abraido-Lanza, A. F., Chao, M. T., & Florez, K. R. (2005). Do healthy behaviors decline with greater acculturation?: Implications for the Latino mortality paradox. *Social Science & Medicine*: *61*(6): 1243–1255.

Acevedo-Garcia, D., Bates, L. M., Osypuk, T. L., & McArdle, N. (2010). The effect of immigrant generation and duration on self-rated health among US adults 2003-2007. *Social Science & Medicine*, *71*: 1161–1172.

Acevedo-Garcia, D., Pan, J., Jun, H-J-, Osypuk, T. L., & Emmons, K. M. (2005). The effect of immigrant generation on smoking. *Social Science & Medicine*, *61*(6): 1223–1242.

Aglipay, M., Colman, I., & Chen, Y. (2013). Does the healthy immigrant effect extend to Anxiety disorders? Evidence from a nationally representative study. *Journal of Immigrant and Minority Health*, *15*(5): 851-857.

Akiyama, H., Antonucci, T., Takahashi, K., & Langfahl. (2003). Negative interactions in close relationships across the life span. *Journal of Gerontology, Series B: Psychological Sciences and Social Sciences*, *58*(2): 70–79.

Akresh, I. R. (2007). Dietary assimilation and health among Hispanic immigrants to the United

States. *Journal of Health and Social Behavior*, *48*(4): 404–417.

Alba, R., & Nee, S. (1997). Rethinking assimilation theory for a new era of immigration. *International Migration Review*, *31*(4): 826-874.

Alegria, M., Shrout, P. E., Woo, M., Guarnaccia, P., Sribney, W., Vila, D., Canino, G. (2007). Understanding differences in past year psychiatric disorders for Latinos living in the US. *Social Science & Medicine*, *65*(2): 214–230.

Alegria, M., Sribney, W., Woo, M., Torres, M., & Guarnccia, P. (2007). Looking beyond nativity: The relation of age of immigration, length of residence, and birth cohorts to the risk of onset of psychiatric disorders for Latinos. *Research in Human Development*. *4*(1-2): 19-47.

Ali, J. (2002). *Mental health of Canada's immigrants* (Supplements to Health Reports, Volume 13) (pp. 1–11). Ottawa, ON: Statistics Canada.

Ali, J., McDermott, S., & Gravel, R. G. (2004). Recent research on immigrant health from Statistics Canada's Population Surveys. *Canadian Journal of Public Health*, *95*(3): 9–13.

Allenswoth, E. M. (1997). Earnings mobility of first and "1.5" generation Mexican-origin women and men: A comparison with US-born Mexican Americans and non-Hispanic whites. *International Migration Review*, *31*(2): 386–410.

Allison, P. D. (2001). *Missing data*. Thousand Oaks, California: Sage Publications, Inc.

Almeida, J., Molnar, B. E., Kawachi, I., & Subramanian, S. V. (2009). Ethnicity and nativity status as determinants of perceived social support: Testing the concept of familism. *Social Science & Medicine*, *68*(10): 1852–1858.

Almog, M., Curtis, S., Copeland, A., & Congdon, P. (2004). Geographical variation in acute psychiatric admissions within New York City 1990–2000: Growing inequalities in service use? *Social Science & Medicine*, *59*(2): 361–376.

Anderson, C. V. (2016) Shame and pride in second-generation German identity in Melbourne, Australia: Emotions and White ethnicity. *Journal of Ethnic and Migration Studies*, *42*(9): 1439–54.

Aneshensel, C. S. (2002). *Theory based data analysis for the social sciences*. Thousand Oaks, California: Sage Publications, Inc.

Aneshensel, C. S. (2009). Toward explaining mental health disparities. *Journal of Health and Social Behavior*, *50*: 377–394.

Anisef, P., Brown, R., Phythian, K., Sweet, R., & Walters, D. (2010). Early school leaving among immigrants in Toronto secondary schools. *Canadian Review of Sociology*, *47*(2): 103–128.

Angel, J. L., Buckley, C. J., & Sakamoto, A. (2001). Duration or disadvantage? Exploring nativity, ethnicity, and health in midlife. *Journal of Gerontology, Series B: Psychological Sciences and Social Sciences*, *56*(5): S275–S284.

Antecol, H., & Bedard, K. (2006). Unhealthy assimilation: Why do immigrants converge to American health status levels? *Demography*, *43*(2): 337–360.

Antecol, H., Cobb-Clark, D. A., & Trejo, S. J. (2003). Immigration Policy and the Skills of Immigrants to Australia, Canada, and the United States. *Journal of Human Resources*, *38*(1): 192–218.

Antonucci, T., Akiyama, H., & Lansford, J. E. (1998). Negative effects of close social relations. *Family Relations*, *47*(4): 379–384.

Aparicio, R. (2007). The integration of the second and 1.5 generations of Moroccan, Dominican and Peruvian origin in Madrid and Barcelona. *Journal of Migration and Ethnic Studies*, *33*(7): 1169-1193.

Aranda, E. M. (2003). Global care work and gendered constraints: The case of Puerto Rican transmigrants. *Gender & Society*, 17(4): 609–26.

Arat-Koc, S. (1999). Neo-liberalism, state restructuring and immigration: Changes in Canadian policies in the 1990s. *Journal of Canadian Studies*, *34*(2): 31–56.

Arcia, E., Skinner, M., Bailey, D., & Correa, V. (2001). Models of acculturation and health behaviors among Latino immigrants to the US. *Social Science & Medicine*, *53*(1): 41–53.

Aroian, K. (1992). Sources of social support and conflict for Polish immigrants. *Qualitative Health Research*, *2*(2): 178–207.

Aroian, K., Spitzer, A., & Bell, M. (1996). Family stress and support among former Soviet immigrants. *Western Journal of Nursing Research*, *18*(6): 655–674.

Asanin, J., & Wilson, K. (2008). "I spent nine years looking for a doctor": Exploring access to health care among immigrants in Mississauga, Ontario, Canada. *Social Science & Medicine*, *66*(6): 1271–1283.

Atkinson, T., Liem, R., & Liem, J. H. (1986). The social costs of unemployment: Implications for social support. *Journal of Health and Social Behavior*, *27*(4): 317–331.

Aydemir, A., & Skuterud, M. (2004). *Explaining the deteriorating entry earnings of Canada's immigrant cohorts: 1966-2000* (No. 11F0019MIE-No 225). Ottawa, ON: Statistics Canada.

Bacio, G. A., Mays, V. M., & Lau, A. (2013). Drinking initiation and problematic drinking among Latino adolescents: Explanations of the immigrant paradox. *Psychology of Addictive Behaviors*, *27*(1): 14–22.

Bailey, B. (2000). Communicative behavior and conflict between African-American customers and Korean immigrant retailers in Los Angeles. *Discourse & Society*, *11*(1): 86–108.

Baldassar, L. (2015). Guilty feelings and the guilt trip: Emotions and motivation in migration and

transnational caregiving. *Emotion, Space, and Society*: 16, 81-89.

Baltatescu, S. (2007). Central and Eastern Europeans migrants' subjective quality of life: A comparative study. *Journal of Identity and Migration Studies*, *1*(2): 67–81.

Bankston, C., & Zhou, M. (2002). Being well vs. doing well: Self-esteem and school performance among immigrant and nonimmigrant racial and ethnic groups. *International Migration Review*, *36*(2): 389–415.

Barcellos, S. H., Goldman, D. P., & Smith, J. P. (2012). Undiagnosed disease, especially diabetes, casts doubt on some of reported health 'advantage'of recent Mexican immigrants. *Health Affairs*, *31*(12): 2727-2737.

Baron, R. M., & Kenny, D. A. (1986). The moderator–mediator variable distinction in social psychological research: Conceptual, strategic, and statistical considerations. *Journal of Personality and Social Psychology*, *51*(6): 1173–1182.

Baron-Epel, O., & Kaplan, G. (2009). Can Subjective and objective socioeconomic status explain minority health disparities in Israel? *Social Science & Medicine*, *69*(10): 1460–67.

Beck, A., Corak, M., & Tienda, M. (2012). Age at immigration and the adult attainments of child migrants to the United States. *The ANNALS of the American Academy of Political and Social Science*, *643*(1): 134–159.

Beier, H., & Kroneberg, C. (2009). Language boundaries and the subjective well-being of Immigrants in Europe. *Journal of Ethnicity and Migration Studies*, *47*(2): 69–101.

Beiser, M. (1988). Influences of time, ethnicity, and attachment on depression in Southeast Asian refugees. *The American Journal of Psychiatry*, *145*(1): 46-51.

Beiser, M. (2005). The health of immigrants and refugees in Canada. *Canadian Journal of Public Health*, *96*(Supplement 2): S30–S44.

Beiser, M., Dion, R., Gotowiec, A., Hyman, I., & Vu, N. (1995). Immigrant and refugee children in Canada. *Canadian Journal of Psychiatry*, *40*(2): 67–72.

Beiser, M., & Hou, F. (2001). Language acquisition, unemployment and depressive disorder among South Asian refugees: A 10-year study. *Social Science & Medicine*: *53*: 1321–1334.

Beiser, M., Hou, F., Hyman, I., & Tousignant, M. (2002). Poverty, family process, and the mental health of immigrant children. *American Journal of Public Health*, *92*(2): 220-227.

Ben-David, A., & Lavee, Y. (1994). Migration and marital distress: The case of Soviet immigrants. *Journal of Divorce and Remarriage*, *21*(3–4): 133–146.

Berg, A. O., Andreassen, O. A., Aminoff, S. R., Romm, K. L., Hauff, E., & Melle, I. (2014). The impact of immigration and visible minority status on psychosis symptom profile. *Social Psychiatry and Psychiatric Epidemiology*, *49*(11): 1747-1757.

Bergeron, P., Auger, N., & Hamel, D. (2009). Weight, general health, and mental health: Status of diverse subgroups of immigrants in Canada. *Canadian Journal of Public Health*, *100*(3): 215-220.

Berry, J. W., & Hou, F. (2016). Immigrant acculturation and wellbeing in Canada. *Canadian Psychology*, *57*(4): 254–264.

Bhugra, D., & Arya, P. (2005). Ethnic density, cultural congruity and mental illness in migrants. *International Review of Psychiatry*, *17*(2): 133–137.

Bird, C. E., & Rieker, P. P. (2008). *Gender and Health: The Effects of Constrained Choices and Social Policies*. New York: Cambridge University Press.

Bisailllon, L. (2013). Disease, disparities and decision making: Mandatory HIV testing of prospective immigrants to Canada. *BioethicOnline*, *2/10*: 1–6.

Blake, S. M., Ledsky, R., Goodenow, R., & O'Donnell, (2001). Recency of immigration,

substance use, and sexual behavior among Massachusetts adolescents. *American Journal of Public Health*, *91*(5): 794–798.

Bleakley, H., & Chin, A. (2004). Language skills and earnings: Evidence from childhood immigrants. *The Review of Economics and Statistics*, *86*(2): 481–496.

Bloemraad, I. (2004). Who claims dual citizenship? The limits of postnationalism, the possibilities of transnationalism, and the persistence of traditional citizenship. *International Migration Review*, *38*(2): 389-426.

Boardman, J. D. (2004). Health pessimism among black and white adults: The role of interpersonal and institutional maltreatment. *Social Science & Medicine*, *59*(12), 2523-2533.

Bohnert, N., Chagnon, J., & Dion, P. (2015). *Population projections for Canada (2013 to 2063), provinces and territories (2013 to 2038): Technical report on methodology and assumptions* (No. 91–620–X). Ottawa, ON: Statistics Canada.

Bonikowska, A., Helliwell, J. F., Hou, Feng, & Schellenberg, G. (2013). *An Assessment of Life Satisfaction Responses on Recent Statistics Canada Surveys* (No. Catalogue 11F0019M — No. 351).

Booth, Alan, and Johnson, David. (1994). Declining health and marital quality. *Journal of Marriage and Family*, 56(1): 218–23.

Borges, G., Breslau, J., Su, M., Miller, M., Medina-Mora, M., Aguilar-Gaxiola, S. (2009). Immigration and suicidal behavior among Mexicans and Mexican Americans. *American Journal of Public Health*, *99*(4): 728-733.

Borges, G., Medina-Mora, M., Orozco, R., Fleiz, C., Cherpitel, C., & Breslau, J. (2016). The Mexican migration to the United States and substance use in northern Mexico. *Addiction*, *104*(4): 603-611.

Borjas, G. J. (1995). Assimilation and changes in cohort quality revisited: What happened to immigrant earnings in the 1980s? *Journal of Labor Economics*, *13*(2): 201-245.

Boyd, M. (2002). Educational attainments of immigrant offspring: Success or segmented assimilation? *International Migration Review*, *36*(4): 1037-1060.

Brandon, P. (2008). The health risk behaviours and social connectedness of adolescents in immigrant families: Evidence from Australia. *International Migration*, *46*(2): 49–80.

Bratsberg, B., & Terrell, D. (1996). Why do Americans live abroad? *The International Migration Review*, *30*(3): 788–802.

Braveman, Paula, Egerter, Susan, & Williams, David R. (2011). The social determinants of health: Coming of age. *Annual Review of Public Health, 32*: 381–398.

Braveman, P, & Gottlieb, L. (2014). The social determinants of health: It's time to consider the causes of the causes. *Public Health Reports, 129*(Suppl2): 19–31.

Breslau, J., & Chang, D. F. (2006). Psychiatric disorders among foreign-born and US-born Asian-Americans in a US national survey. *Social Psychiatry and Psychiatric Epidemiology*, *41*(12): 943-950.

Brettell, C. B. (2003). Bringing the city back in: Cities as contexts for immigrant incorporation. In Foner, Nancy (Ed.), *American arrivals: Anthropology engages the new immigration* (First Edition, pp. 163–195). Santa Fe, New Mexico: School of American Research Press.

Broman, C. L., Hamilton, L. V., & Hoffman, W. S. (2001). *Stress and distress among the unemployed: Hard times and vulnerable people*. New York: Springer.

Brown, T. H., Richardson, L. J., Hargrove, T. W., & Thomas, C. S. (2016). Using multiple-hierarchy stratification and life course approaches to understand health inequalities The

intersecting consequences of race, gender, SES, and age. *Journal of Health and Social Behavior*, *57*(2): 200–222.

Browning, C. R., & Cagney, K. A. (2002). Neighborhood structural disadvantage, collective efficacy, and self-rated physical health in an urban setting. *Journal of Health and Social Behavior*, *43*(4), 383–399.

Bulanda, J. R., & Brown, S. L. (2007). Race-ethnic differences in marital quality and divorce. *Social Science Research*, *36*(3): 945–967.

Burton, L. (2007). Childhood adultification in economically disadvantaged families: A conceptual model. *Family Relations*, *56*(4): 329–345.

Burton, L., & Whitfield, K. E. (2006). Health, aging, and America's poor: Ethnographic insights on family co-morbidity and cumulative disadvantage. In Baars, J., Dannefer, D., Phillipson, C., & Walker, A. (Eds.), *Aging, globalization and inequality: The new critical gerontology*. Amityville, New York: Baywood Publishing Company, INC.

Carlsson, L., & Johnson, C. S. J. (2004). Osteoporosis health beliefs and practices among Korean immigrants in Nova Scotia. *Journal of Immigrant Health*, *6*(2): 93–100.

Carpenter, L., & Brockington, I. F. (1980). A study of mental illness in Asians, West Indians and Africans living in Manchester. *The British Journal of Psychiatry*, *137*: 201–205.

Castaneda, Heide, Carrion, Iraida V., Kline, Nolan, & Tyson, Dinorah Martinez. (2010). False hope: Effects of social class and health policy on oral health inequalities for migrant farmworker families. *Social Science & Medicine*, *71*(11): 2028–2037.

Chadwick, K. A., & Collins, P. A. (2015). Examining the relationship between social support availability, urban center size, and self-perceived mental health of recent immigrants to Canada: A mixed-methods analysis. *Social Science & Medicine*, *128*: 220–230.

Chaze, F., & Robson, K. (2014). In control of life chances? Visible minority immigrants and sense of mastery. *Journal of Immigrant & Refugee Studies, 12*: 161–171.

Chen, A. W., & Kazanjian, A. (2005). Rate of mental health service utilization by Chinese immigrants in British Columbia. *Canadian Journal of Public Health, 96*(1): 49–51.

Chen, J., Ng, E., & Wilkins, R. (1996). The health of Canada's immigrants in 1994-1995. *Health Reports*, *7*(4): 33–45.

Cheng, J. K., Fancher, T. L., Ratanasen, M., Conner, K. R., Duberstein, P. R., Stanley, S., T, & Takeuchi, D. (2010). Lifetime suicidal ideation and suicide attempts in Asian Americans. *Asian American Journal of Psychology*, *1*(1): 18-30.

Cheng, S- T-, Li, K- K-, Leung, E. M. F., & Chan, A. C. (2011). Social exchanges and subjective well-being: Do sources of positive and negative exchanges matter? *Journal of Gerontology, Series B: Psychological Sciences and Social Sciences*, *66B*(6): 708–718.

Chiswick, B. R., Lee, Y-L-, & Miller, P. W. (2005). Family matters: The role of the family in immigrants' destination language acquisition. Journal of Population Economics, 18(4): 631-647.

Chiswick, B. R., Lee, Y-L-, & Miller, P. W. (2006). Immigrants' language skills and visa category. *International Migration Review*, *40*(2): 419–450.

Chiswick, B. R., Lee, Y-L-, & Miller, P. W. (2008). Immigrant selection and immigrant health. *Contemporary Economic Policy*, *26*(4): 555–578.

Cho, Youngtae, Frisbie, Parker W., Hummer, Robert A., & Rogers, Richard G. (2004). Nativity, duration of residence, and the health of Hispanic adults in the United States. *International Migration Review, 38*(1): 184–211.

Chou, Kee-Lee. (2007). Psychological distress in migrants in Australia over 50 years old: A longitudinal investigation. *Journal of Affective Disorder*, *98*(1–2): 99–108.

Chou, K-L-. (2009). Pre-migration planning and depression among new migrants to Hong Kong: The moderating role of social support. *Journal of Affective Disorder*, *114*(1–3): 85–93.

Chung, Hyeeun, & Epstein, Norman B. (2014). Perceived racial discrimination, acculturative stress, and psychological distress among Asian immigrants: The moderating effects of support and interpersonal strain from a partner. *International Journal of Intercultural Relations*, *42*: 129–139.

Cislo, Andrew M., Spence, Naomi J., & Gayman, Mathew. (2010). The mental health and psychosocial adjustment of Cuban immigrants in south Florida. *Social Science & Medicine*, *71*(6): 1173–1181.

Citizenship and Immigration Canada. (2015). *Facts and figures 2014-Immigrant overview: Permanent residents* (Reports and statistics No. D1-2015). Ottawa, ON: Statistics Canada.

Cockerham, W. C. (2005). Health lifestyle theory and the convergence of agency and structure. *Journal of Health and Social Behavior*, *46*(1): 51–67.

Cockrane, R. (1977). Mental illness in immigrants to England and Wales: an analysis of mental hospital admissions, 1971. *Social Psychiatry and Psychiatric Epidemiology*, *12*(25): 25–35.

Cockrane, R., & Bal, S. S. (1989). Mental hospital admission rates of immigrants to England: a comparison of 1971 and 1981. *Social Psychiatry and Psychiatric Epidemiology*, *24*(2): 2–11.

Coll, C. G., & Magnuson, K. (2005) The psychological experience of immigration: A developmental perspective. In M. Suraz-Orozco, C. Suraz-Orozco, & Qin-Hilliard, D. (Eds.), *The new immigration: An interdisciplinary reader*. New York: Routledge.

Connidis, I., & McMullin, J. A. (2002). Sociological ambivalence and family ties: A critical perspective. *Journal of Marriage and Family*, *64*(3): 558–567.

Constant, A. F., Garcia-Munoz, T., Neuman, S., & Neuman, T. (2015). A 'healthy immigrant

effect' or a 'sick immigrant effect'? Selection and policies matter. IZA Discussion Paper No. 9338.

Cranford, C. J. (2005). Networks of Exploitation: Immigrant Labor and the Restructuring of the Los Angeles Janitorial Industry. *Social Problems*, *52*(3): 379–397.

Creighton, M. J., Goldman, N., Pebley, A. R., & Chung, C. Y. (2012). Durational and generational differences in Mexican immigrant obesity: is acculturation the explanation? *Social Science & Medicine*, *75*(2): 300–310.

Crosnoe, Robert. (2006). Health and the education of children from racial/ethnic minority and immigrant families. *Journal of Health and Social Behavior*, *47*(1): 77–93.

Cuellar, Israel, Bastida, Elena, & Braccio, Sara Maria. (2004). Residency in the United States, subjective well-being, and depression in older Mexican-origin sample. *Journal of Aging and Health*, *16*(4): 447–466.

Das-Munshi, J., Clark, C, Dewy, M., Leavy, G., Standford, S., & Prince, M. (2013). Does childhood adversity account for poorer mental health physical health in second-generation Irish people living in Britain? Birth cohort study from Britain (NCDS). *BMJ Open*, *3*: 1–10.

Darvishpour, M. (2002). Immigrant women challenge the role of men: How the changing power relationship within Iranian families in Sweden intensifies family conflicts after immigration. *Journal of Comparative Family Studies, 33*(2): 271-296.

De Castro, A. B., Rue, R., Takeuchi, D. (2010). Associations of employment frustration with self-rated health and mental health among Asian American immigrants in the U.S. labour force. *Public Health Nursing*, *27*(6): 492-503.

De Maio, F. G. (2010). Immigration as pathogenic: A systematic review of the health of

immigrants to Canada. *International Journal for Equity in Health*, *9*(27): 1–20.

De Maio, F. G., & Kemp, E. (2010). The deterioration of health status among immigrants to Canada. *Global Public Health*, *5*(5): 462–478.

DeVault, M. (1991). *Feeding the family: The social organization of caring as gendered work*. Chicago, IL: The University of Chicago Press.

Dean, J. A., & Wilson, K. (2009). 'Education? It is irrelevant to my job now. It makes me very depressed..': Exploring the health impact of under/unemployed among high skilled recent immigrants. *Ethnicity & Health*, *14*(2): 185-204.

Dean, J. A., & Wilson, K. (2010). "My health has improved because I always have everything I need here…": A qualitative exploration of health improvement and decline among immigrants. *Social Science & Medicine*, *70*(8): 1219–1228.

Delaney, L., Fernihough, A., & Smith, J. P. (2013) Exporting poor health: The Irish in England. *Demography*, *50*(6): 2013–35.

Delara, M. (2016). Social determinants of immigrant women's mental health. *Advances in Public Health*, *2016*: 1-11.

Denton, M., Prus, S., & Walters, V. (2004). Gender differences in health: A Canadian study of the psychosocial, structural and behavioral determinants of health. *Social Science & Medicine*, *58*(12): 2585–2600.

Denton, M., & Walters, V. (1999). Gender differences in structural and behavioral determinants of health: an analysis of the social production of health. *Social Science & Medicine*, *48*(9): 1221–1235.

DesMeules, M., Gold, J., McDermott, S., Cao, Z., Payne, J., Lafrance, B., & Vissandjee, B. (2005). Disparities in mortality patterns among Canadian immigrants and refugees, 1980–1998:

results of a national cohort study. *Journal of Immigrant and Minority Health*, *7*(4): 221–232.

Devine, C. M. (2005). A life course perspective: Understanding food choices in time, social location, and history. *Journal of Nutrition Education and Behavior*, *37*(3), 121–128.

Di Leonardo, M. (1978). The female worlds of cards and holidays: Women, families, and the work of kinship. *Signs: Journal of Women in Culture and Society*, *12*(3): 440-453.

Di Thiene, D., Alexanderson, K., Tinghog, P., Torre A. L., Mittendorfer-Rutz, E. (2015). Suicide among first-generation and second-generation immigrants in Sweden: association with labour market marginalisation and morbidity. *Journal of Epidemiology & Community Health*, *69*(5): 467-473.

DiGiacomo, S. M. (1999). Can there be a "cultural epidemiology"? *Medical Anthropology Quarterly*, *13*(4): 436–457.

Ding, D., Hofstetter, R. C., Norman, G. J., Irvin, V. L., Chhay, D., & Hovell, M. F. (2001). Measuring immigration stress of first-generation female Korean immigrants in California: psychometric evaluation of Demand of Immigration Scale. *Ethnicity & Health*, *16*(1): 11–24.

Dion, K., Dion, K., & Pak, A. (1992). Personality-based hardiness as a buffer for discrimination-related stress in members of Toronto's Chinese community. *Canadian Journal of Behavioral Science*, *24*(4): 517–536.

Dolly, J., de Castro, A. B., Martin, D. P., Duran, B., & Takeuchi, D. T. (2012). Does an immigrant health paradox exist among Asian Americans? Associations of nativity and occupational class with self-rated health and mental disorders. *Social Science & Medicine*, *75*(12): 2085–2098.

Dominguez, S., & Watkins, C. (2003). Creating networks for survival and mobility: Social capital among African-American and Latin-American low-income mothers. *Social Problems*, *50*(1): 111–135.

Donato, Katharine, & Duncan, Ebony. (2011). Migration, social networks, and child health in Mexican families. *Journal of Marriage and Family*, *73*(4): 713–728.

Dorner, L. M., Orellana, M. F., & Jimenez, T. R. (2008). "It's one of those things that you do to help the family" Language brokering and the development of immigrant adolescents. *Journal of Adolsecence Research*, *23*(5): 515–543.

Dorner, L. M., Orellana, M. F., & Jimenez, T. R. (2007.). "I helped my Mom," and it helped me: Translating the skills of language brokers into higher standardized test scores. *American Journal of Education*, *113*(3): 451–478.

Drapeau, A., Marchand, A., & Forest, C. (2014). Gender differences in the age-cohort distribution of psychological distress in Canadian adults: findings from a national longitudinal survey. *BMC Psychology*: *2*(25).

Dreby, Joanna. (2012). The burden of deportation on children in Mexican immigrant families. *Joural of Marriage and Family*, *74*(4): 829–845.

Duncan, L., & Simmons, M. (1996). Health practices among Russian and Ukrainian immigrants. *Journal of Community Health Nursing*, *13*(2): 129–137.

Dunn, James R., & Dyke, Isabel. (2000). Social determinants of health in Canada's immigrant population: Results from the National Population Health Survey. *Social Science & Medicine* *51*(11): 1573–1593.

Dziak, Ewelina, Janzen, Bonnie L., & Muhajarine, Nazeem. (2010). Inequalities in the psychological well-being of employed, single and partnered mothers: the role of psychosocial work quality and work-family conflict. *International Journal for Equity in Health*, *9*(6): 1–8.

Eitle, T. M., Wahl, A. G., & Aranda, E. (2009). Immigrant generation, selective acculturation, and alcohol use among Latina/o adolescents. *Social Science & Medicine*, *38*(3): 732–742.

Ek, E, Koiranen, M., Raatikka, V., Jarvelin, M., & Taanila, A. (2008). Psychosocial factors as mediators between migration and subjective well-being among young Finnish adults. *Social Science & Medicine*, *66*(7): 1545–1556.

Elder, G. H. (1994). Time, human agency, and social change: Perspectives on the life course. *Social Psychology Quarterly*, *57*(1): 4–15.

Espiritu, Y. L. (2003). *Home bound: Filipino American lives across cultures, communities, and countries*. Berkeley and Los Angeles, California: University of California Press.

Evans, G. W., Palsane, M. N., Lepore, S. J., & Martin, J. (1989). Residential density and psychological health: The mediating effects of social support. *Journal of Personality and Social Psychology*, *57*(6): 994–999.

Evenson, K. R., Sarimiento, O. L., & Ayala, G. X. (2004). Acculturation and physical activity among North Carolina Latina immigrants. *Social Science & Medicine*, *59*(2): 2509–2522.

Fassin, D. (2011). Policing borders, producing boundaries. The governmentality of immigration in dark times. *Annual Review of Anthropology*, *40*: 213–226.

Feliciano, C., & Rumbaut, R. (2005). Gendered paths: Educational and occupational expectations and outcomes among adult children of immigrants. *Ethnic and Racial Studies*, *28*(6): 1087–1118.

Finch, B. K., Catalano, R. C., Novaco, R. W., & Vega, W. A. (2003). Employment frustration and alcohol abuse/dependence among labor migrants in California. *Journal of Immigrant Health*, *5*(4): 181–186.

Finch, B. K., Do, D. P., Frank, R., & Seeman, T. (2009). Could "acculturation" effects be explained by latent health disadvantages among Mexican immigrants? *International Migration Review*, *43*(3): 471–495.

Finch, B. K., Frank, R., & Hummer, R. A. (2000). Racial/ethnic disparities in infant mortality: The role of behavioral factors. *Social Biology*, *47*(3–4): 244–263.

Finch, B. K., Kolody, Bohdan, & Vega, W. A. (2000). Perceived discrimination and depression among Mexican-origin adults in California. *Journal of Health and Social Behavior*, *41*(3): 295–313.

Finch, J. F., Okun, M. A., Pool, G. J., & Ruehlman, L. S. (1999). A comparison of the influence of conflictual and supportive social interactions on psychological distress. *Journal of Personality*, *67*(4): 581–620.

Findley, S. E. (1998). The directionality and age selectivity of the health-migration relation: Evidence from sequences of disability and mobility in the United States. *International Migration Review*, *22*(3): 4-29.

Fiori, K. L., Windsor, T. D., Pearson, E. L., & Crisp, D. A. (2013). Can positive social exchanges buffer the detrimental effects of negative social exchanges? Age and gender differences. *Gerontology*, *59*: 40–52.

Flippen, C. A., & Parradp. F. A. (2015). Perceived discrimination among Latino immigrants in new destinations: The Case of Durham, North Carolina. *Sociological Perspectives*, *58*(4): 666–685.

Flores, E., Tschann, J. M., VanOss, M., & Pantoja, B. (2004). Marital conflict and acculturation among Mexican American husbands and wives. *Cultural Diversity and Ethnic Minority Psychology*, *10*(1): 39–52.

Fong, E., & Ooka E. (2002). The social consequences of participating in the ethnic economy. *International Migration Review*, *36*(1): 125–146.

Franzini, L., & Fernandez-Esquer, M. E. (2006). The association of subjective social status and health in low-income Mexican-origin individuals in Texas. *Social Science & Medicine*, *63*(3): 788-804.

Frank, C., Davis, C. G., & Elgar, F. J. (2014). Financial strain, social capital, and perceived health during economic recession: A longitudinal survey in rural Canada. *Anxiety, Stress, and Coping*, *27*(4): 422–438.

Frank, K., Hou, F., & Schellenberg, G. (2016). Life satisfaction among recent immigrants in Canada: Comparisons to source-country and host-country populations. *Journal of Happiness Studies*, *17*(4): 1659–1680.

Frank, R., Akresh, I. R., & Lu, B. (2010). Latino immigrants and the US racial order how and where do they fit in? *American Sociological Review*, *75*(3): 378–401.

Frank, R., Cerda, M., & Rendon, M. (2007). Barrios and Burbs: residential context and health-risk behaviors among Angeleno adolescents. *Journal of Health and Social Behavior*, *48*(3): 283–300.

Franks, P., Gold, M., & Fiscella, K. (2003). Sociodemographics, self-rated health, and mortality in the U.S. *Social Science & Medicine*, *56*(12): 2505-2514.

Frenk, S. M., Yang, Y. C., & Land, K. C. (2013). Assessing the significance of cohort and Period effects in hierarchical age-period-cohort models: Applications to verbal test scores and voter turnout in U.S. presidential elections. *Social Forces, 92*(1): 221–248.

Frideres, J. S. (2006). Cities and immigrant population: The future of second- and third- cities. In J. S. Frideres (Eds.), *Our diverse cities* (pp. 3-8). Carleton: Metropolis.

Fuller-Thompson, E., Noack, A. M., & George, U. (2011). Health decline among recent immigrants to Canada: Findings from a nationally-representative longitudinal survey. *Canadian Journal of Public Health, 102*(4): 273-280.

Gee, E., Kobayashi, K., & Prus, S. (2004). Examining the healthy immigrant effect in mid- to later life: Findings from the Canadian Community Health Survey. *Canadian Journal on Aging, 23* (Supplement1), S55-S63.

Gee, G. C., Spencer, M. S., Chen, J., & Takeuchi, D. (2007). A nationwide study of discrimination and chronic health conditions among Asian Americans. *American Journal of Public Health, 97*(7): 1275-1282.

Gee, G. C., Spencer, M. S., Chen, J., Yip, T., & Takeuchi, D. (2007). The association between self-reported racial discrimination and 12-month DSM-IV mental disorders among Asian Americans nationwide. *Social Science & Medicine, 64*(1): 1984-1996.

Gelatt, J. (2013). Looking down or looking up: Status and subjective well-being among Asian and Latino immigrants. *International Migration Review, 47*(1): 39-75.

Gellis, Z. D. (2003). Kin and nonkin social supports in a community sample of Vietnamese immigrants. *Social Work, 48*(2): 248–258.

Gfroerer, J. C., & Tan, L. L. (2003). Substance use among foreign-born youths in the United States: Does the length of residence matter? *The American Journal of Public Health*, *93*(11):

1892–1895.

Giguere, B., Lalonde, R., & Lou, E. (2010). Living at the crossroads of cultural worlds: The experience of normative conflicts by second generation immigrant youth. *Social and Personality Psychology Compass*, *4*(1): 14–29.

Gilbertson, G., & Singer, A. (2003). The emergence of protective citizenship in the USA: naturalization among Dominican immigrants in the post-1996 welfare reform era. *Ethnic and Racial Studies*, *26*(1): 25–51.

Glick, J. E., Walker, L., & Luz, L. (2013). Linguistic isolation in the home and community: Protection or risk for young children? *Social Science Research*, *42*(1): 140–154.

Glavin, P., Schieman, S., & Reid, S. (2011). Boundary-spanning work demands and their consequences for guilt and psychological distress. *Journal of Health and Social Behavior*, *52*(1): 43–57.

Gong, Fang, Xu, Jun, and Takeuchi, David. (2012). Beyond conventional socioeconomic status: Examining subjective and objective social status with self-reported health among Asian immigrants. *Journal of Behavioral Medicine*, *35*(4): 407–719.

Gokdemir, O., and Dumludag, D. (2010) Life satisfaction among Turkish and Moroccan immigrants in the Netherlands: The role of absolute and relative income. *Social Indicators Research*, *106*(3): 407–417.

Gong, F., Xu, J., Fujishiro, K., & Takeuchi, D. (2011). A life course perspective on migration and mental health among Asian immigrants: The role of human agency. *Social Science & Medicine*, *73*(11): 1618–1626.

Gonzales, R., & Chavez, L. (2012). “Awakening to a Nightmare:” Abjectivity and illegality in the lives of undocumented 1.5-generation Latino immigrants in the United States. *Current*

Anthropology, *53*(3): 255–281.

Gonzales, Hector M., Haan, Mary N., and Hinton, Ladson. (2001) Acculturation and the prevalence of depression in older Mexican Americans: Baseline results of the Sacramento Area Latino Study on aging. *Journal of the American Geriatrics Society*, *49*(7): 948–953.

Gordon, C., Purciel-Hill, M., Ghai, N. R., Kaufman, L., Graham, R., & Wye, G. V. (2011). Measuring food deserts in New York City's low-income neighborhoods. *Health & Place*, *17*(2): 696–700.

Gordon, M. M. (1964). Assimilation in American life: The role of race, religion, and national origins. New York: Oxford University Press.

Gordon-Larsen, P., Harris, K. M., Ward, D., S., & Popkin, B. M. (2003). Acculturation and overweight-related behaviors among Hispanic immigrants to the US: The National Longitudinal Study of Adolescent Health. *Social Science & Medicine*, *57*: 2023–2034.

Goto, S. G., Gee, G. C., & Takeuchi, D. (2002). Strangers still? The experience of discrimination among Chinese Americans. *Journal of Community Psychology*, *30*(2): 211–224.

Graham, S., Munniksma, A., & Juvonen, J. (2014). Psychosocial benefits of cross-ethnic friendships in urban middle schools. *Child Development*, *85*(2): 469–483.

Green, A. G., & Green, D. A. (1999). The economic goals of Canada's immigration policy: Past and present. *Canadian Public Policy*, *25*(4): 425–451.

Green, D. A., & Worswick, C. (2012). Immigrant earning profiles in the presence of human capital investment: Measuring cohort and macro effects. *Labour Economics*, *19*(2): 241-259.

Guarini, T. E., Marks, A. K., Patton, F., & Coll, C. G. (2011). The immigrant paradox in sexual risk behavior among Latino adolescents: Impact of immigrant generation and gender. *Applied Developmental Science*, *15*(4): 201–209.

Guendelman, S. D., Ritterman-Weintraub, M., Fernald, L. C., & Kaufer-Horwitz, M. (2013). weight status of Mexican immigrant women: A comparison with women in Mexico and with US-born Mexican American women. *American Journal of Public Health*, *103*(9): 1634-1640.

Gubernskaya, Z. (2014). Age at migration and self-rated health trajectories after age 50: Understanding the older immigrant health paradox. *The Journals of Gerontology: Series B, Psychological Sciences and Social Sciences*, *70*(2): 279–290.

Gubernskaya, Z., Bean, F. D., & Van Hook, J. (2013). (Un) Healthy immigrant citizens naturalization and activity limitations in older age. *Journal of Health and Social Behavior*, *54*(4): 427–443.

Gushulak, B. D., & Williams, L. S. (2004). National immigration health policy: existing policy, changing needs, and future directions. *Canadian Journal of Public Health*, *95*(3): 27–29.

Gutmann, M. C. (1999). Ethnicity, alcohol, and acculturation. *Social Science & Medicine*, *48*(2): 173–184.

Haan, M. (2011). Does immigrant residential crowding reflect hidden homelessness? *Canadian Studies in Population*, *38*(1–2): 43–59.

Hadjar, A., & Backes, S. (2013). Migration background and subjective well-being a multilevel analysis based on the European social survey. *Contemporary Sociology*, *12*(5): 645-676.

Hafford, C. (2010). Sibling caretaking in immigrant families: Understanding cultural practices to inform child welfare practice and evaluation. *Evaluation and Program Planning*, *33*(3): 294–302.

Hagan, J. M. (1998). Social networks, gender, and immigrant incorporation: Resources and constraints. *American Sociological Review*, *63*(1): 55–67.

Hamilton, H. A., Noh, Samuel, & Adlaf, E. M. (2009). Adolescent risk behaviours and

psychological distress across immigrant generations. *Canadian Journal of Public Health*, *100*(3): 221–225.

Hamilton, H. A., van der Mass, M., Boak, A., & Mann, R. E. (2014). Subjective social status, immigrant generation, and cannabis and alcohol use among adolescents. *Journal of Youth and Adolescence*, *43*(7): 1163–1175.

Hamilton, T. G., & Hummer, R. A. (2011). Immigration and the health of U.S. black adults: Does country of origin matter? *Social Science & Medicine*, *73*(10): 1551–1560.

Hanes, R. (2009). None is still too many: A historical exploration of Canadian Immigration Legislation as it pertains to people with disabilities. *Developmental Disability Bulletin*, *37*(1&2): 91–126.

Hansell, S., & White, H. R. (1991). Adolescent drug use, psychological distress, and physical symptoms. *Journal of Health and Social Behavior*, *32*(3): 288–301.

Hao, L., & Kim, J. H. (2009). Immigration and the American obesity epidemic. *International Migration Review*, *43*(2): 237–262.

Hao, L., & Woo, H. S. (2012). Distinct trajectories in the transition to adulthood: are children of immigrants advantaged? *Child Development*, *83*(5): 1623–1639.

Harker, K. (2001). Immigrant generation, assimilation, and adolescent psychological well-being. *Social Forces*, *79*(3): 969–1004.

Harrell, S. P. (2000). A multidimensional conceptualization of racism-related stress: implications for the well-being of people of color. *American Journal of Orthopsychiatry*, *70*(1): 42–57.

Hendriks, M. (2015). The happiness of international migrations: A review of research findings. *Migration Studies*, *3*(3): 343–369.

Hill, T. D., Angel, J. L., Balistreri, K. S., & Herrera, A. P. (2012). Immigrant status and cognitive

functioning in late-life: An examination of gender variations in the healthy immigrant effect. *Social Science & Medicine*, *75*(12): 2076–2084.

Hirsch, J. S. (2003). Anthropologists, migrants, and health research: Confronting cultural appropriateness. In F., Nancy (Ed.), *American Arrivals: Anthropology engages the new immigration* (1st ed., pp. 229–257). Santa Fe, New Mexico: School of American Research Press.

Hochschild, A. R. (1983). *The managed heart: Commercializaion of human feelings*. Berkeley and Los Angeles, California: University of California Press.

Hou F. (2009) Immigrants working with co-ethnics: Who are they and how do they fare?. *International Migration*, *47*(2): 69–100.

Houle, R., & Schellenberg, G. (2010). *New immigrants' assessment of the life in Canada* (No. 11F0019M — No. 322). Ottawa, ON: Statistics Canada.

Horwitz, A. V., McLaughlin, J., & White, H. R. (1998). How the negative and positive aspects of partner relationships affect the mental health of young married people. *Journal of Health and Social Behavior*, *39*(2): 124–136.

Horwitz, A. V., White, Raskin H., & Howell-White, S. (1996). Becoming married and mental health: A longitudinal study of a cohort of young adults. *Journal of Marriage and Family*, *58*(4): 895–907.

House, J. S. (2002). Understanding social factors and inequalities in health: 20th century progress and 21st century prospects. *Journal of Health and Social Behavior*, *43*(2): 125–142.

Hua, J. M., & Costigan, C. L. (2012). The familial context of adolescent language brokering within immigrant Chinese families in Canada. *Journal of Youth and Adolescence*, *41*(7): 894–906.

Hurh, W- M-, & Kim, K- C-. (1990). Adaptation stages and mental health of Korean male

immigrants in the United States. *International Migration Review*, *24*(3): 456–479.

Hurh, J., Prause, J. A., & Dooley C. D. (2008) The impact of nativity on chronic disease: Self-rated health and comorbidity status of Asian and Hispanic immigrants. *Journal of Immigrant and Minority Health*, *10*(2): 102-118.

Hyman, I., Forte, T., Du Mont, J., Romans, S., & Cohen, M. M. (2006). Help-seeking rates for intimate partner violence (IPV) among Canadian immigrant women. *Health Care for Women International*, *27*(8): 682-694.

Hyman, I., Sepali, G., & Mason, R. (2008). The impact of migration on marital relationships: A study of Ethiopian immigrants in Toronto. *Journal of Comparative Family Studies*, *39*(2): 149–163.

Hyman, I., Vu, N., & Beiser, M. (2000). Post-migration stresses among Southeast Asian refugee youth in Canada: A research note. *Journal of Comparative Family Studies*, *31*(2): 281–293.

Ibarra, M. (2002). Emotional proletarians in a global economy: Mexican immigrant women and elder care work. *Urban Anthrolopology and Studies of Cultural Systems and World Economic Development*, *31*(3/4): 317–50.

Ingersoll-Dayton, Berit, Morgan, David, & Antonucci, Toni. (1997). The effects of positive and negative social exchanges on aging adults. *Journal of Gerontology, Series B: Psychological Sciences and Social Sciences, 52B* (4): S190–S199.

Islam, Farah. (2013). Examining the "healthy immigrant effect" for mental health in Canada. *University of Toronto Medical Journal, 90*(4): 169–175.

Jackson, James S., Forsythe-Brown, Ivy, & Govia, Ishtar O. (2007). Age cohort, ancestry, and immigrant generation influences in family relations and psychological well-being among Black Caribbean family members. *Journal of Social Issues, 63*(4): 729–743.

Jackson, M., McLanahan, S., & Kierna, K. (2012). Nativity differences in mothers' health behaviors: A cross-national and longitudinal lens. *Annals of the American Academy of Political and Social Science*, *64*(31): 192–218.

Jackson, P. B., Williams, David R., Stein, D. J., Herman, A., Willams, S. L., & Redmond, D. L. (2010). Race and psychological distress The South African stress and health study. *Journal of Health and Social Behavior*, *51*(4): 458–477.

Jaggers, J., & MacNeil, G. (2015). Depression in Hispanic adults who Immigrated as youth: Results from the National Latino and Asian American Study. *Best Practices in Mental Health, 11*(2): 1–23.

James, C., Estes, D., Bernard, W. T., Benjamin, A., Lloyd, B., & Turner, T. (2010). *Race and well-being: The lives, hopes, and activism of African Canadians*. Halifax, Nova Scotia: Ferwood Publishing.

Janevic, T., Savitz, D. A., & Janevic, M. (2011). Maternal education and adverse birth outcomes among immigrant women to the United States from Eastern Europe: A test of the healthy migrant hypothesis. *Social Science & Medicine*, *73*(3): 429-435.

Jones, I. R., Papacosta, O., Whincup, P., Wannamethee, S. G., & Morris, R. W. (2011). Class and lifestyle "lock-in" among middle-aged and older men: A Multiple Correspondence Analysis of the British Regional Heart Study. *Sociology of Health & Illness*, *33*(3): 399–419.

Joshanloo, M., Wissing, M. P.,, Khumalo, I. P., & Lamers, S. M. (2013) Measurement invariance of the Mental Health Continuum-Short Form (MHC-SF) across three cultural groups. *Personality and Individual Differences*, *55*(7): 755–59.

Kaestner, R., Malamud, O. (2014). Self-selection and international migration: New evidence from Mexico. *Review of Economics and Statistics*, *96*(1): 78-91.

Kaestner, R., Pearson, J. A., Keene, D., & Geronimus, A. T. (2009). Stress, allostatic load, and health of Mexican immigrants. *Social Science Quarterly*, *90*(5): 1089–1111.

Kaida, L., & Boyd, M. (2011). Poverty variations among the elderly: The roles of income security policies and family co-residence. *Canadian Journal on Aging*, *30*(1): 83–100.

Kaltialia-Heino, R., Rimpela, M., Rantanen, P., & Laippala, P. (2001). Adolescent depression: The role of discontinuities in life course and social support. *Journal of Affective Disorder*, 155–166.

Kang, M. (2003). The managed hand: The commercialization of bodies and emotions in Korean immigrant–owned nail salons. *Gender & Society*, *17*(6): 820–39.

Kamya, H. A. (1997). African Immigrants in the United States: The Challenge for Research and Practice. *Social Work*, *42*(2): 154–165.

Kao, W- H-, & Tsai, Y--M-. (1986). Social networking, hardiness and immigrant's mental health. *Journal of Health and Social Behavior*, *27*(2): 133–149.

Kaplan, M., Huguet, N., Newsom, J. T., & McFarland, B. H. (2004). The association between length of residence and obesity among Hispanic immigrants. *American Journal of Public Health*, *27*(4): 323–326.

Karas, Dominika, Cieciuch, Jan, and Keyes, Corey L. M. (2014). The Polish adaptation of the Mental Health Continuum-Short Form (MHC-SF). *Journal of Personality and Individual Differences*, 69: 104–9.

Kaushal, N. (2009). Adversities of acculturation? Prevalence of obesity among immigrants. *Health Economics*, *18*: 291–303.

Kawachi, I., & Berkman, L. F. (2001). Social ties and mental health. *Journal of Urban Health*, *78*(3): 458–467.

Kayaalp, D. (2016). Living with an accent: a sociological analysis of linguistic strategies of immigrant youth in Canada. *Journal of Youth Studies*, *19*(2): 133–148.

Kazemipur, A. (2006). The market value of friendship: social networks of immigrants. *Canadian Ethnic Studies*, *38*(2): 47–71.

Kennedy, S., & McDonald, J. T. (2006). Immigrant mental health and unemployment. *Economic Record*, *82*(259): 445–459.

Kessler, R. C. (1979). Stress, social status, and psychological distress. *Journal of Health and Social Behavior*, *20*(3): 259–272.

Kessler, R. C. (2002). The categorical versus dimensional assessment controversy in the sociology of mental illness. *Journal of Health and Social Behavior*, *43*(2): 171–188.

Kessler, R. C., Barker, P. R., & Colpe, L. (2003). Screening for serious mental illness in the general population. *Archives of General Psychiatry*, *60*(2): 184–189.

Kessler, R. C., Mickelson, K. D., & Williams, D. R. (1999). The prevalence, distribution, and mental health correlates of perceived discrimination in the United States. *Journal of Health and Social Behavior*, *40*(3): 208–230.

Kessler, R. C., Foster, C. L., and Saunders, W. B. (1995) Social consequences of psychiatric disorders, Part I: Educational attainment. *The American Journal of Psychiatry, 152*(7): 1026–32.

Keyes, C. L. (2002). The mental health continuum: From languishing to flourishing in life. *Journal of Health and Social Behavior*, *43*(2): 207–222.

Keyes, C. L. (2005). Mental illness and /or mental health? Investigating axioms of the complete state model of health. *Journal of Consulting and Clinical Psychology*, *73*(3): 539–548.

Keyes, C. L. (2007). Promoting and protecting mental health as flourishing: A complementary strategy for improving national mental health. *American Psychologist*, *62*(2): 95–108.

Keyes, C. L., Wissing, M. P., Potgieter, J. C., and van Rooy, S. (2008). Evaluation of the Mental Health Continuum-Short Form (MHC-SF) in Swetsana-speaking South Africans. *Clinical Psychology & Psychotherapy*, *15*(3): 181–92.

Keyes, C. L., Dhingra, S. S., & Simoes, D. J. (2010). Change in level of positive mental health as a predictor of future risk of mental illness. *American Journal of Public Health*, *100*(12): 2366–2371.

Keyes, K. M. (2014). Age, period, and cohort effects in psychological distress in the United States and Canada. *American Journal of Epidemiology*, *179*(10): 1216–1227.

Kiang, L., Grzywacz, J. G., Marin, A., Arcury, T., & Quandt, S. A. (2010). Mental health in immigrants from non-traditional sites. *Cultural Diversity and Ethnic Minority Psychology*, *16*(3): 386-194.

Kibra, N. (1994). Household structure and family ideologies: The dynamics of immigrant economic adaptation among Vietnamese refugees. *Social Problems*, *41*(1): 81–96.

Kim, B-J-, Sangalang, C. C., & Kihl, T. (2012). Effects of acculturation and social network support on depression among elderly Korean immigrants. *Aging & Mental Health*, *16*(6): 787–794.

Kim, J. (2010). Neighborhood disadvantage and mental health: The role of neighborhood disorder and social relationships. *Social Science Research*, *39*(2), 260–271.

Kim, J. A., Yang, S. J., Chee, Y. K., Kwon, K. J., & An. J. (2015). Effects of health status and health behaviors on depression among married female immigrants in South Korea. *Asian Nursing Research*, *9*(2): 125–131.

Kim, W., & Chen, Y. L. (2011). The social determinants of depression in elderly Korean immigrants in Canada: does acculturation matter? *The International Journal on Aging and*

Human Development, *73*(4): 283–298.

Kimbro, R. T. (2009). Acculturation in context: Gender, age at migration, neighborhood ethnicity, and health behaviors. *Social Science Quarterly*, *90*(5): 1145–1166.

Kimbro, R. T., Bzostek, S., Goldman, N., & Rodriquez, G. (2008). Race, ethnicity, and the education gradient in health. *Health Affairs*, *27*(2): 361–372.

Kirkbride, James B. (2014). Hitting the floor: Understanding migration patterns following the first episode of psychosis. *Health & Place*, *28*: 150–152.

Klein, C. (2013) Social Capital or Social Cohesion: What matters for subjective well-being?. *Social Indicators Research*, *110*(3): 891–911.

Kobayashi, K. M., & Prus, S. G. (2012). Examining the gender, ethnicity, and age dimensions of the healthy immigrant effect: Factors in the development of equitable health policy. *International Journal for Equity in Health, 11*(8): 1–6.

Koehn, S., Neysmith, S., Kobayashi, Karen M., & Khmisa, H. (2013). Revealing the shape of knowledge using an intersectionality lens: Results of a scoping review on the health and health care of ethnocultural minority older adults. *Aging & Society, 33*(3): 437–464.

Kosteniuk, Julie G., & Dickinson, Harley D. (2003). Tracing the social gradient in the health of Canadians: primary and secondary determinants. *Social Science & Medicine*, *57*(2): 263–276.

Kraemer, H. C., Stice, E., Kazdin, A., Offord, D., & Kupfer, D. (2001). How do risk factors work together? Mediators, moderators, and independent, overlapping, and proxy risk factors. *The American Journal of Psychiatry*, *158*(6): 848–856.

Krause, N., & Rook, Karen S. (2003). Negative interaction in late life: Issues in the stability and generalizability of conflict across relationships. *The Journals of Gerontology: Series B,*

Psychological Sciences and Social Sciences, *58*(2): 88–99.

Kreager, Derek A. (2008). Guarded borders: Adolescent interracial romance and peer trouble at school. *Social Forces*, *87*(2): 887–910.

Krupinski, J. (1984). Changing patterns of migration to Australia and their influence on the health of migrants. *Social Science & Medicine*, *18*(11): 927–937.

Kulis, S., Marsiglia, F. F., & Nieri, T. (2009). Perceived ethnic discrimination versus acculturation stress: Influences on substance use among Latino youth in the Southwest. *Journal of Health and Social Behavior*, *50*(4): 443–459.

Kwak, Kyunghwa. (2016). An evaluation of the healthy immigrant effect with adolescents in Canada: Examinations of gender and length of residence. *Social Science & Medicine*, *157*: 87–95.

Lakhani, S. M., & Timmermans, S. (2014). Biopolitical citizenship in the immigration adjudication process. *Social Problems*, *61*(3): 360–379.

Lamers, Sanne M.A., Westerhof, Garben J., Bohlmeijer, Ernst T., Klooster, Peter M., and Keyes, Corey. (2011) Evaluating the psychometric properties of the Mental Health Continuum-Short Form (MHC-SF) *Journal of Clinical Psychology*, *67*(1): 99–110.

Lamont, A., Ukoumunne, O. C., Tyrer, P., Thornicroft, G., & Slaughter, J. (2000). The geographical mobility of severely mentally ill residents in London. *Social Psychiatry and Psychiatric Epidemiology*, *35*(4): 164–169.

Landale, N. S., Oropesa, S. R., & Gorman, B. K. (2000). Migration and infant death: Assimilation or selective migration among Puerto Ricans? *American Sociological Review*, *65*(6): 888–909.

Landale, N. S., Oropesa, S. R., Llanes, D. & Gorman, B. K. (1999). Does Americanization have

adverse effects on health?: Stress, health habits, and infant health outcomes among Puerto Ricans. *Social Forces*, *78*(2): 613–641.

Landale, N. S., & Oropesa, S. R. (2001). Migration, social support and perinatal health: an origin-destination analysis of Puerto Rican women. *Journal of Health and Social Behavior*, *42*(2): 166–183.

Landrine, H., & Klonoff, E. (2004). Cultural change and ethnic-minority health behavior: An operant theory of acculturation. *Journal of Behavioral Medicine*, *27*(6): 527-555

Landrine, H., Corral, I., Hall, M. B., Bess, J., & Efird, J. (20116). Self-rated health, objective health, and racial discrimination among African-Americans: Explaining Inconsistent findings and testing health pessimism. *Journal of Health Psychology*, *21*(11): 2514–24.

Lara-Cinisomo, S., Xue, Y., & Brooks-Gunn, J. (2013). Latino youth's internalising behaviours: links to immigrant status and neighbourhood characteristics. *Ethnicity & Health*, *18*(3): 315–335.

Lau, A. S., Tsai, W., Shih, J., Liu, L. L., & Hwang, W-C-. (2013). The immigrant paradox among Asian American women: Are disprities in the burden of depression and anxiety paradoxical or explicable? *Journal of Consulting and Clinical Psychology*, *81*(5): 901–911.

Leavey, G., Rozmovits, L., Ryan, L., & King, M. (2007). Explanations of depression among Irish migrants in Britain. *Social Science & Medicine*, *65*(2): 231–244.

Leclere, F. B., Jensen, L., & Biddlecom, A. E. (1994). Health care utilization, family context, and adaptation among immigrants to the United States. *Journal of Health and Social Behavior*, *35*(4): 370–84.

Lee, H- S-, Brown, S. L., Mitchell, M., & Schiraldi, G. R. (2008). Correlates of resilience in the face of adversity for Korean women immigrating to the US. *Journal of Immigrant and Minority Health*, *10*(5): 415–422.

Leong, F., Park, Y. S., & Kalibatseva, Z. (2013). Disentangling immigrant status in mental Health: psychological protective and risk factors among Latino and Asian American Immigrants. *Journal of Orthopsychiatry*, *83*(2): 361-371.

Lepore, S. J. (1992). Social conflict, social support, and psychological distress: Evidence of cross-domain buffering effects. *Journal of Personality and Social Psychology*, *63*(5): 857–867.

Lepore, S. J., Evans, G.W., & Schneider, M. L. (1991). Dynamic role of social support in the link between chronic stress and psychological distress. *Journal of Personality and Social Psychology*, *61*(6): 899–909.

Leu, J., Yen, I. H., Gansky, S. A., Walton, E., Adler, N. E., & Takeuchi, D. (2008). The association between subjective social status and mental health among Asian immigrants: Investigating the influence of age at immigration. *Social Science & Medicine*, *66*(5): 1152–1164.

Levels, M., Dronkers, J., & Kraaykamp, G. (2008). Immigrant children's educational achievement in Western countries: Origin, destination, and community effects on mathematical performances. *American Sociological Review*, *73*(5): 835-853.

Li, P. (2008). The role of foreign credentials and ethnic ties in immigrants' economic performance. *Canadian Journal of Sociology*, 33(2): 291-310.

Liang, J., Krause, N., & Bennet, J. M. (2001). Social exchange and well-being: Is giving better than receiving? *Psychology and Aging*, *16*(3): 511–523.

Liang, Z. (2014). Social contact, social capital, and the naturalization process: Evidence from six immigrant groups. *Social Science Research*, *23*(4): 407–437.

Lincoln, K. D., & Chae, D. H. (2012). Emotional support, negative interaction and major depressive disorder among African Americans and Caribbean Blacks: findings from the National Survey of American Life. *Social Psychiatry and Psychiatric Epidemiology*, *47*(3): 361–372.

Lindstrom, D. P., & Massey, D. S. (1994). Selective emigration, cohort quality, and models of immigrant assimilation. *Social Science Research*, *23*(4): 315-349.

Link, B. G. (2008). Epidemiological sociology and the social shaping of population health. *Journal of Health and Social Behavior*, *49*(4): 367–384.

Little, R. J. A., & Rubin, D. B. (2002). *Statistical analysis with missing data*. Hoboken, New Jersey: John Wiley & Sons. Inc.

Lopez-Gonzalez, Lorena, Aravena, Veronica C., & Hummer, Robert A. (2005). Immigrant acculturation, gender and health behavior: A research note. *Social Forces*, *84*(1): 581–593.

Lutz, Amy, & Crist, Stephanie. (2009). Why do bilingual boys get better grades in English-only America? The impacts of gender, language and family interaction on academic achievement of Latino/a children of immigrants. *Ethnic and Racial Studies*, *32*(2): 346–368.

Lynam, J., & Cowley, S. (2007). Understanding marginalization as a social determinant of health. *Critical Public Health*, *17*(2): 137-149.

Mabry, B. J., & Kiecolt, J. K. (2005). Anger in Black and White: Race, alienation, and anger. *Journal of Health and Social Behavior*, *46*(1): 85–101.

MacPherson, D. W., & Gushulak, Brian D. (2006). Balancing prevention and screening among international migrants with tuberculosis: Population mobility as the major epidemiological influence in low-incidence nations. *Public Health*, *120*(8): 712–723.

Malmusi, D., Borrell, C., & Benach, J. (2010). Migration-related health inequalities: Showing the complex interactions between gender, social class and place of origin. *Social Science & Medicine*, *71*(9): 1610–1619.

Marmot, M., Ryff, C. D., Bumpass, L. L., Shipley, M., & Marks, N. F. (1997). Social inequalities in health: next questions and converging evidence. *Social Science & Medicine*, *44*(6): 901–910.

Martel, L., & D'Aoust, C. (2016). *Report on the demographic situation in Canada: Permanent and temporary immigration to Canada from 2012 to 2014* (No. 91–209–X). Ottawa, ON: Statistics Canada.

Martin, M. M., Van Hook, J. L., & Quiros, S. (2015). Is socioeconomic incorporation associated with a healthier diet? Dietary patterns among Mexican-origin children in the United States. *Social Science & Medicine*, *147*: 20–29.

Martinez, C. R., McClure, H. H., & Eddy, J. M. (2008). Language brokering contexts and behavioral and emotional adjustment among Latino parents and adolescents. *Journal of Early Adolescence*, *29*(1): 71–98.

Mawani, R. (2007). Screening out diseased bodies: Immigration, mandatory HIV testing, and the making of healthy Canada. In Bashford, Allison (Ed.), *Medicine at the border: Disease, globalization and security, 1850 to the present* (1st ed., pp. 136–158). New York: Palgrave Macmillan UK.

Maximova, K., & Krahn, H. (2010). Health status of refugees settled in Alberta: Changes since arrival. *Canadian Journal of Public Health*, *101*(4), 322-326.

McDonald, J. T., & Kennedy, S. (2004). Insights into the "healthy immigrant effect": health status and health service use of immigrants to Canada. *Social Science & Medicine*, *59*(8), 1613–1627.

McDonald, J. T, & Kennedy, S. (2005). Is migration to Canada associated with unhealthy weight gain? Overweight and obesity among Canada's immigrants. *Social Science & Medicine*, *61*(12), 2469–2481.

McGee, R., & Williams, S. (2000). Does low self-esteem predict health compromising behaviours among adolescents? *Journal of Adolescence*, *23*(5), 569–582.

McKenzie, D., & Rapoport, H. (2010). Self-selection patterns in Mexico-US migration: The role of migration networks. *The Review of Economics and Statistics*, *92*(4), 811-821.

McLeod, J. D., & Fettes, D. L. (2007). Trajectories of failure: The educational careers of children with mental health problems. *American Journal of Sociology*, *113*(3), 653–701.

Mehrotra, M., & Calasanti, T. M. (2010). The family as a site for gendered ethnic identity work among Asian Indian immigrants. *Journal of Family Issues*, *31*(6), 778-807.

Melzer, S. M. (2011). Does migration make you happy? The influence of migration on subjective well-being. *Journal of Social Research & Policy*, *2*(2), 73–92.

Mendoza, F. S. (2009). Health disparities and children in immigrant families: A research agenda. *Pediatrics*, *124*(3), S187–S195.

Menijivar, C. (2000). *Fragmented Ties: Salvadoran Immigrant Networks in America*. Berkeley and Los Angeles, California: University of California Press.

Menijivar, C. (2008). Educational hopes, documented dreams: Guatemalan and Salvadoran immigrants' legality and educational prospects. *The ANNALS of the American Academy of Political and Social Science*, *620*(1), 177–93.

Miech, R. A., Moffitt, A. C., Wright, B. R., & Silva, P. A. (1999) Low socioeconomic status and mental disorders: A longitudinal study of selection and causation during young adulthood. *American Journal of Sociology*, *104*(4): 1096–1131.

Min, P. G. (2001). Changes in Korean immigrants' gender role and social status, and their marital conflicts. *Sociological Forum*, *16*(2), 201-320.

Mirowsky, J., & Ross, C. (1980). Minority status, ethnic culture, and distress: A comparison of Blacks, Whites, Mexicans, and Mexican Americans. *American Journal of Sociology*, *86*(3): 479–95.

Mirowsky, J., & Ross, C. (2003). *Education, social status, and health*. New York: Aldine De Gruyter.

Mirowsky, J., & Ross, C. (2012). *Social causes of psychological distress* (Second Edition). New Brunswick: AldineTransaction.

Mirowsky, J., & Ross, C. (2015). Education, health, and the default American lifestyle. *Journal of Health and Social Behavior*, *56*(3): 297–306.

Molina, K. M., & Alcantara, C. (2013). Household structure, family ties, and psychological distress among U.S.-born and immigrant Latino women. *Journal of Family Psychology*, *27*(1): 147–158.

Moden, C. (2007). Partners in health? Exploring resemblance in health between partners in married and cohabiting couples. *Sociology of Health & Illness*, *29*(3): 391-411.

Montazer, S., & Wheaton B. (2011). The impact of generation and country of origin on the mental health of immigrant children. *Journal of Health and Social Behavior*, *52*(1): 23-42.

Montazer, S., Wheaton, B., & Noh, S. (2016). Economic conditions in countries of origin and trajectories in distress after migration to Canada Results from the National Population Health Survey. *The Social Science Journal*, *53*(4): 534–544.

Morgan, C., Mallett, R., Hutchinson, G., & Leff, J. (2004). Negative pathways to psychiatric care and ethnicity: the bridge between social science and psychiatry. *Social Science & Medicine*, *58*(4), 739-752.

Mossakowski, K. N. (2003). Coping with perceived discrimination: does ethnic identity protect mental health? *Journal of Health and Social Behavior*, *44*(3): 318–331.

Mossakowski, K. N. (2007). Are immigrants healthier? The case of depression among Filipino Americans. *Social Psychology Quarterly*, *70*(3), 290–304.

Mossakowski, K. N., & Zhang (2014). Does social support buffer the stress of discrimination and reduce psychological distress among Asian Americans? *Social Psychology Quarterly*, *77*(3), 273–295.

Mui, A., Kang, S- Y-, Kang, D., & Domanski, M. D. (2007). English language proficiency and health-related quality of life among Chinese and Korean immigrant elders. *Health & Social Work*, *32*(2), 119-127.

Mulvaney-Day, N., Alegria, M., & Sribney, W. (2007). Social cohesion, social support, and health among Latinos in the United States. *Social Science & Medicine*, *62*(2), 477–495.

Myers, D., Gao, X., & Emeka, A. (2009). The gradient of immigrant age-at-arrival effects on socioeconomic outcomes in the US. *International Migration Review*, *43*(1), 205–229.

Nath, V. (2011). Aesthetic and emotional labour through Stigma: National identity management and racial abuse in offshored Indian call centres. *Work, Employment, and Society*, *25*(4), 709–25.

Needham, B. L., Crosnoe, R., & Muller, C. (2004). Academic failure in secondary school: The inter-related role of health problems and educational context. *Social Problems*, *51*(4), 569–86.

Newbold, B. K. (2005a). Health status and health care of immigrants in Canada: A longitudinal analysis. *Journal of Health Services Research & Policy*, *10*(2), 71–83.

Newbold, B. K. (2005b). Self-rated health within the Canadian immigrant population: Risk and the healthy immigrant effect. *Social Science & Medicine*, *60*(6), 1359–1370.

Newbold, B. K. (2006). Chronic conditions and the healthy immigrant effect: Evidence from Canadian immigrants. *Journal of Ethnicity and Migration Studies*, *32*(5), 765–784.

Newbold, B. K. (2009). The short-term health of Canada's new immigrant arrivals: Evidence from LSIC. *Ethnicity & Health*, *14*(3), 315–336.

Newbold, B. K., & Danforth, J. (2003). Health status and Canada's population. *Social Science &*

Medicine, *57*(10), 1981-1995.

Newbold, B. K., Watson, S., and Ellaway, A. (2015) Emigration of Scottish steelworkers to Canada: Impacts on social networks. *Population, Space and Place*, *21*(8): 720–34.

Ng, E., Pottie, K., & Spitzer, D. (2011). Official language proficiency and self-reported health among immigrants to Canada. *Health Reports*, *22*(3): 15–23.

Ngyuen, H., Rawana, J. S., & Flora, D. B. (2011). Risk and protective predictors of trajectories of depressive symptoms among adolescents from immigrant backgrounds. *Journal of Youth and Adolescence*, *40*(11), 1544–1558.

Noh, S., & Avison, W. R. (1996). Asian immigrants and the stress process: A study of Koreans in Canada. *Journal of Health and Social Behavior*, *37*(2), 192–206.

Noh, S., Beiser, M., Kaspar, V., & Hou, F. (1999). Perceived racial discrimination, depression, and coping: A sudy of Southeast Asian refugees in Canada. *Journal of Health and Social Behavior*, *40*(3), 193–207.

Noh, S., & Kaspar, V. (2003). Perceived discrimination and depression: Moderating effects of coping, acculturation, and ethnic support. *American Journal of Public Health*, *93*(2), 232–238.

Noh, S., Kaspar, V., & Wickrama, K. A. (2007). Overt and subtle racial discrimination and mental health: Preliminary findings for Korean immigrants. *American Journal of Public Health*, *97*(7), 1269–1274.

Nomaguchi, K., & House, A. H. (2013). Racial-ethnic disparities in maternal parenting stress: the role of structural disadvantages and parenting values. *Journal of Health and Social Behavior*, *54*(3), 386–404.

OECD. (2016). Health status [Data file]. Retrieved from http://stats.oecd.org/index.aspx?DataSetCode=HEALTH_STAT.

Okabayashi, H., Liang, J., Krause, N., Akiyama, H., & Sugisawa, H. (2004). Mental health among older adults in Japan: do sources of social support and negative interaction make a difference? *Social Science & Medicine*, *59*(11), 2259–2270.

Omariba, D. W. R., & Ng, E. (2011). Immigration, generation and self-rated health in Canada: On the role of health literacy. *Canadian Journal of Public Health*, *102*(4), 281–285.

Ong, A. D., Fuller-Rowell, T., & Burrow, A. L. (2009). Racial discrimination and the stress process. *Journal of Personality and Social Psychology*, *96*(6), 1259–1271.

Orellana, M. F. (2003). Responsibilities of children in Latino immigrant families. *New Directions for Student Leadership*, *100*(Winter), 25–39.

Orellana, M. F., Dorner, L., & Pulido, L. (2003). Accessing assets: Immigrant youth's work as family translators or "para-phrasers." *Social Problems*, *50*(4), 505–524.

Ornelas, I. J., & Perreira, Kr. M. (2011). The role of migration in the development of depressive symptoms among Latino immigrant parents in the USA. *Social Science & Medicine*, *73*(8), 1169–1177.

Osypuk, T. L., Roux, A. V., Hadley, C., & Kandula, N. (2009). Are immigrant enclaves healthy places to live? The Multi-ethnic Study of Atherosclerosis. *Social Science & Medicine*, *69*(1), 110–120.

Oxman-Martinez, J., Hanley, J., Lach, L., & Khanlou, N. (2005). Intersection of Canadian policy parameters affecting women with precarious immigration status: A baseline for understanding barriers to health. *Journal of Immigrant and Minority Health*, *7*(4), 247–258.

Pan, S. W., & Carpiano, R. M. (2013). Immigrant density, sense of community belonging, and suicidal ideation among racial minority and White immigrants in Canada. *Journal of Immigrant and Minority Health*, *15*(1), 34–42.

Parr, H., Philo, C., & Burns, N. (2004). Social geographies of rural mental health: experiencing inclusions and exclusions. *Transactions of the Institute of British Geographers*, *29*(4), 401–419.

Parrenas, R. S. (2005). Children of globalization: Transnational families and gender woes. Redwood City, CA: Stanford University Press.

Pearlin, L. I. (1989). The sociology of stress. *Journal of Health and Social Behavior*, *30*(3), 241–256.

Pearlin, L. I. (2010). The life course and the stress process: Some conceptual comparisons. *The Journals of Gerontology: Series B, Psychological Sciences and Social Sciences*, *65B*(2), 207–215.

Pearlin, L. I., & Bierman, A. (2013). Current issues and future directions in research into the stress process. In Aneshensel, Carol S., Phelan, J. C., & Bierman, Alex (Eds.), *Handbook of the Sociology of Mental Health* (pp. 325–340). New York: Springer.

Pearlin, L. I., Menaghan, E. G., Lieberman, M. A., & Mullan, J. T. (1981). The Stress Process. *Journal of Health and Social Behavior*, *22*(4): 337–356.

Pearlin, L. I., & Skaff, M M. (1996). Stress and the life course: A paradigmatic alliance. *Gerontologist*, *36*(2), 239–247.

Perreira, K., & Ornelas, I. (2013). Painful passages: Traumatic experiences and post-traumatic stress among U.S. immigrant Latino adolescents and their primary caregivers. *International Migration Review*, *47*(7), 976-1005.

Peters, F., Vink, M., & Schmeets, H. (2016). The ecology of immigrant naturalisation: A life course approach in the context of institutional conditions. *Journal of Ethnic and Migration Studies*, *42*(3), 359-381.

Petrillo, G., Capone, V., Caso, D., Corey, L. M. (2015). The Mental Health Continuum-Short

Form (MHC-SF) as a measure of well-being in the Italian context. *Social Indicators Research*, 121, 291-312.

Pettit, J. W., Roberts, R. E., Lewinsohn, P. M., Seeley, J. R., & Yaroslavsky, I. (2011). Developmental relations between perceived social support and depressive symptoms through emerging adulthood: Blood is thicker than water. *Journal of Family Psychology*, *25*(1), 127–136.

Phelan, J. C., & Link, B. G. (2015). Is racism a fundamental cause of inequalities in health? *Annual Review of Sociology*, *41*, 311-330.

Phelan, J. C., Link, B. G., & Tehranifar, P. (2010). Social conditions as fundamental causes of health inequalities: Theory, evidence, and policy implications. *Journal of Health and Social Behavior*, *51*(S), 528-540.

Phinney, J. S., Ong, A., & Madden, T. (2000). Cultural values and intergenerational value discrepancies in immigrant and non-immigrant families. *Child Development*, *71*(2), 528–539.

Picot, G., Hou, F, & Coulombe, S. (2008). Poverty dynamics among recent immigrants to Canada. *International Migration Review*, *42*(2), 393–424.

Picot, G., & Sweetman, A. (2005). *The Deteriorating Economic Welfare of Immigrants and Possible Causes: Update 2005.* (Analytical Studies Branch Research Paper 262). Ottawa, ON: Statistics Canada.

Piedra, L. M., & Engstrom, D. W. (2009). Segmented assimilation theory and the life model: An integrated approach to understanding immigrants and their children. *Social Work*, *54*(3), 270–277.

Porter, J. (2015). *The vertical mosaic: An analysis of social class and power in Canada, 50th anniversary edition*. Toronto: University of Toronoto Press.

Portes, A. (1998). Social capital: Its origins and applications in modern sociology. *Annual*

Review of Sociology, *24*, 1–24.

Portes, A., & Zhou, M. (1993). The new second generation: segmented assimilation and its variants. *The ANNALS of the American Academy of Political and Social Science*, *530*(1), 74–96.

Pottie, K., Ng, E., Spitzer, D., Mohammed, A., & Glazier, R. (2008). Language proficiency, gender and self-reported health: An analysis of the first two waves of the longitudinal survey of immigrants to Canada. *Canadian Journal of Public Health*, *99*(6), 505–510.

Prus, S. (2011). Comparing social determinants of self-rated health across the United States and Canada. *Social Science & Medicine*, *73*(1), 50–59.

Public Health Revenue of Canada (2011) Obesity in Canada. Retrieved from http://www.phac-aspc.gc.ca/hp-ps/hl-mvs/oic-oac/sum-som-eng.php

Puyat, J. H. (2013). Is the influence of social support on mental health the same for immigrants and non-immigrants? *Journal of Immigrant Minority Health*, 15, 598–605.

Pyke, K. (2005). "Generational deserters" and "black sheep": Acculturative differences among siblings in Asian immigrant families. *Journal of Family Issues*, *26*(4), 491–517.

Pyke, K., & Bengtson, V. L. (1996). Caring more or less: Individualistic and collectivist systems of family eldercare. *Journal of Marriage and Family, 58*(2), 379–392.

Ra, C. K., Cho, Y., & Hummer, R. A. (2013). Is acculturation always adverse to Korean immigrant health in the United States? *Journal of Immigrant and Minority Health*, *15*(3), 510–516.

Ramraji, C., Pulvar, A., & Siddiqi. (2015). Intergenerational transmission of the healthy immigrant effect (HIE) through birth weight: A systematic review and meta-analysis. Social Science & Medicine, 146: 29-40.

Raphael, D. (2006). Social determinants of health: present status, unanswered questions, and

future directions. *International Journal of Health Services: Planning, Administration, Evaluation*, *36*(4), 651–677.

Read, J., & Reynolds, M. M. (2012). Gender differences in immigrant health: The case of Mexican and Middle Eastern immigrants. *Journal of Health and Social Behavior*, *53*(1), 99–123.

Reay, Diane. (2005). Beyond consciousness? The psychic landscape of social class. *Sociology*, *39*(5): 911–28.

Reither, E. N., Masters, R. K., Yang, Y. C., Powers, D. A., Zheng, H., & Land, K. C. (2015). Should Age-Period-Cohort Studies Return to the Methodologies of the 1970s? *Social Science & Medicine*, 128, 356–365.

Reitz, J. G. (2001). Immigrant skill utilization in the Canadian labour market: Implications of human capital research. *Journal of International Migration Review*, *2*(3): 347–378.

Reitz, J. G. (2007). Immigrant employment success in Canada, Part I: Individual and contextual causes. *Journal of International Migration and Integration, 8*(1):11–36.

Remennick, L. (1999). Preventive behavior among recent immigrants: Russian-speaking women and cancer screening in Israel. *Social Science & Medicine*, *48*(11): 1669–1684.

Riosmena, F., Everett, B. G., Rogers, R. G., & Dennis, J. A. (2015). Negative acculturation and nothing more? Cumulative disadvantage and mortality during the immigrant adaptation process among Latinos in the United States. *International Migration Review*, *49*(2): 443–478.

Ritsner, M., Modai, I., & Ponizovsky, A. (2000). The stress-support patterns and psychological distress of immigrants. *Stress and Health*, *16*(3): 139–149.

Ro, A., & Bostean, G. (2015). Duration of U.S. stay and body mass index among Latino and Asian immigrants: A test of theoretical pathways. *Social Science & Medicine*, *144*: 39–47.

Ro, A., Fleischer, N. L., Blebu, B. (2016). An examination of health selection among U.S.

immigrants using multi-national data. *Social Science & Medicine*, *158*: 114-121.

Robert, A., & Gilkinson, T. (2012). Mental health and well-being of recent immigrants in Canada: Evidence from the Robert, Survey of Immigrants to Canada (No. RR20130301). Toronto: Citizenship and Immigrant Canada.

Robitschek, C., & Keyes, Corey L. M. (2009). Keyes's model of mental health with personal growth initiative as a parsimonious predictor. *Journal of Counselling Psychology*, *56*(2), 321–329.

Rook, K. S. (1984). The negative side of social interaction: Impact on psychological well-being. *Journal of Personality and Social Psychology*, *46*(5), 1097–1108.

Rook, K. S. (1990). The negative side of social interaction: Impact on psychological well-being. *Journal of Personality and Social Psychology*, *46*(5), 1097–1188.

Ross, Catherine, and Van Willigen, Marieke. (1996). Gender, parenthood, and anger. *Journal of Marriage and Family*, *58*(3): 572–84.

Roth, Wendy D., Seidel, Marc-David, Ma, Dennis, & Lo, Eiston. (2012). In and out of the ethnic economy: A longitudinal analysis of ethnic networks and pathways to economic success across immigrant categories. *International Migration Review*, *46*(2), 310–361.

Rubalcava, Luis N., Teruel, Graciela M., Thomas, Duncan, & Goldman, Noreen. (2008). The healthy migration effect: New findings from the Mexican Family Survey. *American Journal of Public Health*, 98(1), 78–84.

Ruhm, C. J. (2005). Healthy living in hard times. *Journal of Health Economics*, 24(2), 341–363.

Rumbaut, R. G. (1997). Assimilation and its discontents: Between rhetoric and reality. *International Migration Review*, *31*(4): 923-960.

Rumbaut, R. G. (2004). Ages, life stages, and generational cohorts: Decomposing the immigrant

first and second generations in the United States. *International Migration Review*, *38*(3), 1160–1205.

Rumbaut, R. G. (2005). Turning points in the transition to adulthood: Determinants of educational attainment, incarceration, and early childbearing among children of immigrants. *Ethnic and Racial Studies*, *28*(6), 1041–1086.

Ryan, L. (2008). Navigating the emotional terrain of families "here" and "there": women, migration and the management of emotions. *Journal of Intercultural Studies*, *29*(3), 299-313.

Ryan, L., Leavey, G., Golden, A., Blizard, R., & King, M. (2006). Depression in Irish migrants living in London: Case-control study. *The British Journal of Psychiatry*, *188*(6), 560-566.

Ryan, L., Sales, R., Tilki, M., & Siara, B. (2008). Social networks, social support and social capital: The experiences of recent Polish migrants in London. *Sociology*, *42*(4), 672–690.

Ryder, M. (1965) The cohort as a concept in the study of social change. *American Journal of Sociology*, *30*(6), 843-861.

Safi, M. (2010). Immigrants' life satisfaction in Europe: Between assimilation and discrimination. *European Sociological Review*, *26*(2), 159–176.

Safipour, J., Schopflocher, D., Higginbottom, G., & Emami, A. (2011). Feelings of social alienation: a comparison of immigrant and non-immigrant Swedish youth. *International Journal of Sociology and Social Policy*, *31*(7/8): 456–468.

Salas-Wright, C., Vaughn, M. G., Clark, T. T., Terzis, L. D., & Cordova, D. (2014). Substance use disorders among first-and second-generation immigrant adults in the United States: Evidence of an immigrant paradox? *Journal of Studies on Alcohol and Drugs*, *75*(6): 958–967.

Sanders, J., Nee, V., & Sernau, S. (2002). Asian immigrants' reliance on social ties in a multiethnic labor market. *Social Forces*, *81*(1): 281–314.

Schafer, J. L. (1997). *Analysis of incomplete multivariate data*. Boca Raton, Florida: CRC Press.

Schachter, A., Kimbro, R. T., Gorman, B. K. (2012). Language proficiency and health status: Are bilingual immigrants healthier? *Journal of Health and Social Behavior*, *53*(1): 124-145.

Scheff, T. J. (2000). Shame and the social bond: A sociological theory. *Sociological Theory*, *18*(1): 84–99.

Scheffler, R. M., Brown, T. T., & Rice, J. K. (2007). The role of social capital in reducing non-specific psychological distress: The importance of controlling for omitted variable bias. *Social Science & Medicine*, *65*(4): 842–854.

Schieman, S. (1999). Age and anger. *Journal of Health and Social Behavior*, *40*(3): 273–89.

Schieman, S. (2009). Suppression effects in social stress research and their implications for the Stress Process Model. In Avison, William R., Aneshensel, Carol S., Schieman, Scott, & Wheaton, Blair (Eds.), *Advances in the Conceptualization of the Stress Process* (pp. 53–68). New York: Springer.

Schieman, S, & Reid, S. (2009). Job authority and health: Unraveling the competing suppression and explanatory influences. *Social Science & Medicine*, *69*(2), 1616–1624.

Schnittker, J., & McLeod, J. D. (2005). The social psychology of health disparities. *Annual Review of Sociology*, *31*, 75–103.

Seeman, M. V. (2011). Canada: Psychosis in the immigrant Caribbean population. *International Journal of Social Psychiatry*, *57*(5), 462-470.

Selton, J., & Hoek, H. W. (2008). Does misdiagnosis explain the schizophrenia epidemic among immigrants from developing countries to Western Europe?. *Social Psychiatry and Psychiatric Epidemiology*, *43*(12), 937-939.

Segall, A., & Chappell, N. (2000). *Health and health care in Canada*. Toronto: Prentice Hall.

Seglem, K. B., Oppedal, B., & Roysamb, E. (2014). Daily hassles and coping dispositions as predictors of psychological adjustment: A comparative study of young unaccompanied refugees and youth in the resettlement country. *International Journal of Behavioral Development*, *38*(3), 293–303.

Setia, M. S., Quesnel-Vallee, A., Abrahamowicz, M., Tousignant, P., & Lynch, J. (2009). Convergence of body mass index of immigrants to the Canadian-born population: Evidence from the national population health survey (1994–2006). *European Journal of Epidemiology*, *24*(10), 611–623.

Setia, M. S., Quesnel-Vallee, A., Abrahamowicz, M., Tousignant, P., & Lynch, J. (2012). Different outcomes for different health measures in immigrants: Evidence from the national population health survey (1994–2006). *Journal of Immigrant and Minority Health*, *14*(1), 156-165.

Shakya, Y., Khanlou, N., & Gonsalves, T. (2010). Determinants of mental health for newcomer youth: Policy and service implications. *Canadian Issues*, *Summer*, 98–102.

Shamian, J., O'Brien-Pallas, L., Thomson, D., Alksnis, C., & Kerr, M. S. (2003). Nurse absenteeism, stress and workplace injury: What are the contributing factors and what can/should be done about it? *International Journal of Sociology and Social Policy*, *23*(8/9): 81-103.

Shields, J., Phillip, K., Prier, N., & Fang, T. (2011). Profiling immigrant poverty in Canada: A 2006 census statistical portrait. *Canadian Review of Social Policy*, *65–66*, 92–111.

Shin, H- S-, Han, H- R-, & Kim, M. T. (2007). Predictors of psychological well-being amongst Korean immigrants to the United States: A structured interview survey. *International Journal of Nursing Studies*, *44*(3), 415–426.

Shih, K. Y., & Pyke, K. (2010). Power, resistance, and emotional economies in women's

relationships with mothers-in-law in Chinese immigrant families. *Journal of Family Issues*, *31*(3): 333–57.

Silver, R. C., Worthman, C. B., & Crofton, C. (1990). The role of coping in support provision: The self-presentational dilemma of victims of life crises. In Sarason, B. R., Sarason, I. G., & Pierce, G. R. (Eds.), *Social support: An interactional view* (pp. 397–426). Oxford, England.

Simmons, A. B., & Plaza, D. E. (2006). The Caribbean community in Canada: Transnational connections and transformers. In Satzewich, V. & Wong, L. (Eds.), *Transnational identities and practices in Canada* (pp. 130–149). Vancouver, BC: UBC Press.

Singh, G. K., & Siahpush, M. (2002). Ethnic-immigrant differentials in health behaviors, morbidity, and cause-specific mortality in the United States: an analysis of two national data bases. *Human Biology*, *74*(1), 83–109.

Slade, T., Grove, R., & Burgess, P. (2011). Kessler psychological distress scale: Normative data from the 2007 Australian National Survey of Mental Health and Wellbeing. *The Australian and New Zealand Journal of Psychiatry*, *45*(4), 308–316.

Smith, G. N., Boydell, J., Murray, R. M., Flynn, S., McKay, K., Sherwood, M., & Honer, W. G. (2006). The incidence of schizophrenia in European immigrants in Canada. *Schizophrenic Research*, 87(1-3): 205-211.

Solari, C. (2006) Professionals and saints: How immigrant careworkers negotiate gender identities at work. *Gender & Society*, *20* (3), 301–31.

Spencer, M. S., & Chen, J. (2004). Effect of discrimination on mental health service utilization among Chinese Americans. *American Journal of Public Health, 94*(5), 809–814.

Statistics Canada. (2004). *Canadian Community Health Survey Mental Health and Well-being* (No. 82–617–XIE). Ottawa, ON: Statistics Canada.

Statistics Canada. (2011). *National Household Survey: Immigration and ethnocultural diversity in Canada* (No. 99–010–X). Ottawa, ON: Statistics Canada.

Statistics Canada. (2013). Body composition of Canadian adults, 2009 to 2011 (No. 82-625X). Ottawa, ON: Statistics Canada.

Statistics Canada. (2016). *150 years of immigration in Canada* (No. 11–630–X). Ottawa, ON: Statistics Canada.

Stefanek, E., Strohmeier, D., Fandrem, H., & Spiel, C. (2012). Depressive symptoms in native and immigrant adolescents: the role of critical life events and daily hassles. *Anxiety, Stress, and Coping*, *25*(2), 201–217.

Stephenson, P. H. (1995). Vietnamese refugees in Victoria, BC: an overview of immigrant and refugee health care in a medium-sized Canadian urban centre. *Social Science & Medicine*, *40*(12), 1631–1642.

Stewart, Q. T., & Dixon, J. C. (2010). Is it race, immigrant status, or both? An analysis of wage disparities among men in the United States. *International Migration Review*, *44*(1), 173–201.

Stillman, S, Gibson, J., McKenzie, D., & Rohorua, H. (2015). Miserable migrants? Natural experiment evidence on international migration and objective and subjective well-being. *World Development*, *65*: 79-93.

Su, D., Wen, M., & Markides, K. S. (2013) Is self-rated health comparable between Non-Hispanic Whites and Hispanics? Evidence from the Health and Retirement Study. *Journal of Gerontology, Series B: Psychological Sciences and Social Sciences*, 68(4): 622–32.

Suarez-Orozco, C., Rhodes, J., & Milburn, M. (2009). Unravelling the immigrant paradox: Academic engagement among recently arrived immigrant youth. *Youth & Society*, *41*(2), 151–185.

Suarez-Orozco, C., Todorova, I. L. G., & Louie, J. (2002). Making up for lost time: The experience of separation and reunification among immigrant families. *Family Process*, *41*(4), 625–643.

Suarez-Orozco, Marcelo M. (2005). Right moves? Immigration, globalization, utopia, and dystopia. In *The new immigration: An interdisciplinary reader* (pp. 3–19). New York and London: Routledge.

Subedi, Rajendra P., & Rosenberg, Mark W. (2014). Determinants of the variations in self-reported health status among recent and more established immigrants in Canada. *Social Science & Medicine*, *115*, 103–110.

Sun, Ken. (2012). Fashioning the reciprocal norms of elder care: A case of immigrants in the United States and their parents in Taiwan. *Journal of Family Issues 33*(9): 1240–71.

Sutherland, A., & Findlay, L. C. (2013). *Perceived need for mental health care in Canada: Results from the 2012 Canadian Community Health Survey–Mental Health* (No. 82–003–X). Ottawa, ON: Statistics Canada.

Takeuchi, D. T., Chung, R., & Lin, K. (1998). Lifetime and twelve-month prevalence rates of major depressive episodes and dysthymia among Chinese Americans in Los Angeles. *American Journal of Psychiatry*, *115*, 1407–1414.

Takeuchi, D. T., Zane, N., Hong, S., Chae, D. H., Gong, F., Gee, G. C., … Alegria, M. (2007). Immigration-Related Factors and Mental Disorders Among Asian Americans. *American Journal of Public Health*, *97*(1), 84–90.

Taylor, Cedric A., & Sarathchandra, Dilshani. (n.d.). Migrant selectivity or cultural buffering? Investigating the Black immigrant health advantage in low birth weight. *Journal of Immigrant and Minority Health*, *18*(2), 390–396.

Taylor, M. G., & Lynch, S. M. (2004). Trajectories of impairment, social support, and depressive symptoms in later life. *Journal of Gerontology, Series B: Psychological Sciences and Social Sciences*, *59*(4), S238–S246.

Telzer, E. T., & Fuligni, A. J. (2009). Daily family assistance and the psychological well-being of adolescents from Latin American, Asian, and European backgrounds. *Developmental Psychology*, *42*(4), 1177–1189.

Thapa, S. B., & Hauff, E. (2005). Gender differences in factors associated with psychological distress among immigrants from low-and middle-income countries. *Social Psychiatry and Psychiatric Epidemiology*, *40*(1), 78–84.

Thoits, P. A. (1995). Stress, coping, and social support processes: Where are we? What next? *Journal of Health and Social Behavior, Extra Issue*, 53–79.

Thoits, P. A. (2010). Stress and health major findings and policy implications. *Journal of Health and Social Behavior*, *51*(1(S)), S41–S53.

Tiwari, S. K., & Wang, J. L. (2008). Ethnic differences in mental health service use among White, Chinese, South Asian and South East Asian populations living in Canada. *Social Psychiatry and Psychiatric Epidemiology*, *43*(11), 866–871.

Toole, M. J., & Waldman, R. J. (1997). The public health aspects of complex emergencies and refugee situations. *Annual Review of Public Health*, *18*, 283–312.

Torres, J. M., & Wallace, S. P. (2013). Migration circumstances, psychological distress, and self-rated physical health for Latino immigrants in the United States. *American Journal of Public Health*, *103*(9), 1619–1627.

Tran, Thanh V., Manalo, Victor, & Nguyen, Vitor T.D. (2007). Nonlinear relationship between length of residence and depression in a community-based sample of Vietnamese Americans. *International Journal of Social Psychiatry*, *53*(1), 85–94.

Tsai, J. H- C-. (2006). Xenophobia, ethnic community, and immigrant youths' friendship network formation. *Adolescence*, *41*(162), 285–298.

Turner, Jay, & Donald, Lloyd. (1999). The stress process and the social distribution of depression. *Journal of Health and Social Behavior*, *40*(4), 374–404.

Turner, Jay, Lloyd, Donald A., & Taylor, John. (2006). Stress burden, drug dependence and the nativity paradox among U.S. Hispanics. *Drug and Alcohol Dependence*, *83*(1), 79–89.

Turney, K. (2014). Stress proliferation across generations? Examining the relationship between parental incarceration and childhood health. *Journal of Health and Social Behavior*, *55*(3), 302–319.

Ungemack, J. A., & Guarnaccia, P. J. (1998). Suicidal ideation and suicide attempts among Mexican Americans, Puerto Ricans and Cuban Americans. *Transcultural Psychiatry*, *35*(2): 307-327.

Urquia, M. L., O'Campo, P. J., & Heaman, M. I. (2012). Revisiting the immigrant paradox in reproductive health: The roles of duration of residence and ethnicity. *Social Science & Medicine*, *74*(10): 1610-1621.

Valenzuela, A. (1999). Gender role and settlement activities: Among children and their immigrant families. *American Behavioral Scientist*, *42*(4), 720–742.

van de Vijver, F. J. R., & Arends-Toth, J. V. (2009). Family support in five cultural groups in the Netherlands. *Journal of Comparative Family Studies*, *40*(3), 455–473.

Van Hook, J., & Baker, E. (2010). Big boys and little girls: Gender, acculturation and weight among young children of immigrants. *Journal of Health and Social Behavior*, *51*(2): 200-214.

Van Hook, J., & Balistreri, K. S. (2007). Immigrant generation, socioeconomic status, and economic development of countries of origin: A longitudinal study of body mass index among children

Van Hook, J., Quiros, S., F., Mitchelle L., & Fikru, E. (2016). It is hard to swim upstream: dietary acculturation among Mexican-origin children. *Population Research and Policy Review*, *35*(2), 177–196.

van Tubergen, Frank. (2014). Size and socio-economic resources of core discussion networks in the Netherlands: differences by national-origin group and immigrant generation. *Ethnic and Racial Studies*, *37*(6), 1020–1042.

Vang, Z., Sigouin, J., Flenon, A., & Gagnon, A. (2015). The healthy immigrant effect in Canada. *Population Change and Life Course*, *3*(1), Article 4.

Vaquera, E., & Kao, G. (2008). Do you like me as much as I like you? Friendship reciprocity and its effects on school outcomes among adolescents. *Social Science Research*, *37*(1), 55–72.

Veenstra, G. (2013). Race, gender, class, sexuality (RGCS) and hypertension. *Social Science & Medicine*, *89*, 16–24.

Vega, William A., Kolody, Bohdan, & Valle, J. R. (1987). Migration and mental health: An empirical test of depression risk factors among immigrant Mexican women. *International Migration Review*, *21*(3), 512–530.

Veling, W., Hoek, H. W., Selten, J., & Susser, E. (2011). Age at migration and future risk of psychotic disorders among immigrants in the Netherlands: A 7-year incidence study. *The American Journal of Psychiatry*, *168*(12), 1278–1285.

Vieno, A., Santinello, M., Pastore, M., & Perkins, D. D. (2007). Social support, sense of community in school, and self-efficacy as resources during early adolescence: an integrative model. *American Journal of Community Psychology*, *39*(1–2), 177–190.

Villatoro, A. P., & Aneshensel, C. S. (2014). Family influences on the use of mental health services among African Americans. *Journal of Health and Social Behavior*, *55*(2), 161–180.

Viruell-Fuentes, E. A., Miranda, P. Y., & Abdulrahim, S. (2012). More than culture: structural racism, intersectionality theory, and immigrant health. *Social Science & Medicine*, *75*(2): 2099–2106.

Wacquant, L. J. (1998). Negative social capital: State breakdown and social destitution in America's urban core. *Netherlands Journal of Housing and the Built Environment*, *13*(1), 25–40.

Wakabayashi, C. (2010). Effects of immigration and age on health of older people in the United States. *Journal of Applied Gerontology*, *29*(6), 697-719.

Wakabayashi, C., & Donato, K. (2006) Does caregiving increase poverty among women in later life? Evidence from the Health and Retirement Survey. *Journal of Health and Social Behavior, 47*(3), 258–74.

Wakefield, D. W., & Hudley, C. (2007). Ethnic and racial identity and adolescent well-being. *Theory into Practice*, *46*(2), 147–154.

Wang, L., & Kwak, M- J-. (2015). Immigration, barriers to healthcare and transnational ties: A case study of South Korean immigrants in Toronto, Canada. *Social Science & Medicine*, *133*, 340–348.

Weibe, S. (2009). Producing bodies and borders: A review of immigrant medical examinations in Canada. *Surveillance & Society*, *6*(2), 128–141.

Wheaton, B. (1985). Models for the stress-buffering functions of coping resources. *Journal of Health and Social Behavior*, *26*(4), 352–364.

Wheaton, B. (2010). The stress process as a successful paradigm. In Avison, William R., Aneshensel, Carol S., schieman, Scott, & Wheaton, Blair (Eds.), *Advances in the Conceptualization of the Stress Process* (pp. 231–252). New York: Springer.

WHO. (2017). *Social determinants of health.* Retrieved from http://www.who.int/social_determinants/en/

Wickrama, K. A., & Bryant, C. M. (2003). Community context and social resources and adolescent mental health. *Journal of Marriage and Family*, *65*(4): 850-866.

Wijeratne, L. T., Williams, S. S., Rodrigo, M. D. A., Peris, M. U., Kawamura, N., & Wickremasinghe, A. R. (2011). Validation of the Kessler's psychological distress scale among the Sinhalese population in Sri Lanka. *Asian Journal of Psychiatry*, *2*(2), 21–25.

Williams, D. R. (2002). Racial/ethnic variations in women's health: The Social embeddedness of health. *American Journal of Public Health*, *92*(4), 588–597.

Williams, D. R. (2012). Miles to go before we sleep: Racial inequities in health. *Journal of Health and Social Behavior*, *53*(3), 279–295.

Williams, D. R., & Collins, C. (2001). Racial residential segregation: a fundamental cause of racial disparities in health. *Public Health Reports*, *116*(5): 404–416.

Williams, D. R., Haile, R., Gonzalez, H., Neighbors, H., Baser, R., Jackson, J. (2007). The mental health of Black Caribbean immigrants: Results from the National Survey of American Life. *American Journal of Public Health*, *97*(1), 52-59.

Williams, D. R., & Sternthal, M. J. (2010). Understanding racial-ethnic disparities in health sociological contributions. *Journal of Health and Social Behavior*, *51*(1), S15–S27.

Williams, D. R., & Holt, A. P. (2013). Screening immigrants for tuberculosis—why not for HBV infection? *The Lancet*, *381*(9884): 2164–2165.

Wilson, A. E., Shuey, K. M., and Elder, G. H. (2003). Ambivalence in the relationship of adult children to aging parents and in-laws. *Journal of Marriage and Family*, *65*(4): 1055–72.

Wolf, D. L. (1997). Family secrets: Transnational struggles among children of Filipino immigrants. *Sociological Perspectives*, *40*(3): 457–482.

Wong, C. A., Eccles, J .S., & Sameroff, A. (2003). The influence of ethnic discrimination and ethnic identification on African American adolescents' school and socioemotional adjustment. *Journal of Personality*, *71*(6): 1197–1232.

Wu, B., Chi, I., Plassman, B. L., & Guo, M. (2010). Depressive symptoms and health problems among Chinese immigrant elders in the US and Chinese elders in China. *Aging & Mental Health*, *14*(6), 695–704.

Wu, Z., Noh, S., Kaspar, V., & Schimmele, C. M. (2003). Race, ethnicity, and depression in Canadian society. *Journal of Health and Social Behavior*, *44*(3), 426–441.

Wu, Z., Penning, M. J., & Schimmele, C. M. (2005). Immigrant status and unmet health care needs. *Canadian Journal of Public Health*, *96*(5), 367–73.

Wu, Zheng, & Schimmele, C. M. (2005). The healthy migrant effect on depression: Variation over time? *Canadian Studies in Population*, *32*(2), 271–295.

Xie, Y., & Greeman, E. (2011). The social context of assimilation: Testing implications of segmented assimilation theory. *Social Science Research*, *40*(3), 965-984.

Yip, T., Gee, G. C., & Takeuchi, D. (2008). Racial discrimination and psychological distress: The

impact of ethnic identity and age among immigrant and United States-born Asian adults. *Developmental Psychology*, *44*(3), 787–800.

Yorgason, Jeremy B., Booth, Alan, and Johnson, David. Health, disability, and marital quality: Is the association different for younger versus older cohorts? *Research on Aging* 30, no. 6 (2008): 623–48.

Young, M. (2015). Work-family conflict in context: The Impact of structural and perceived neighborhood disadvantage on work-family conflict. *Social Science Research*, *50*, 311–327.

Young, M., & Wheaton, B. (2013). The impact of neighborhood social composition on work-family conflict and distress. *Journal of Health and Social Behavior*, *54*(4), 481–497.

Yu, S., Quellet, E., & Warmington, A. (2007). Refugee integration in Canada: A survey of empirical evidence and existing services. *Refugee*, *24*(2), 17–32.

Zelizer, V. (1985). *Pricing the priceless child: The changing social value of children*. New York: Basic Books, Inc.

Zhang, Wei, Hong, Seunghye, Takeuchi, David T., & Mossakowski, Krysia N. (2012). Limited English proficiency and psychological distress among Latinos and Asian Americans. *Social Science & Medicine*, *75*(6), 1006–1014.

Zhang, W., & Ta, V. M. (2009). Social connections, immigration-related factors, and self-rated physical and mental health among Asian Americans. *Social Science & Medicine*, *68*(12), 2104–2112.

Zhao, Jun, Xue, Li, & Gilkinson, Tara. (2010). Health status and social capital of recent immigrants in Canada: Evidence from the Longitudinal Survey of Immigrants to Canada. In McDondald T. E., Ruddick A. Sweetman, & Worswick C. (Eds.), *Canadian Immigration:*

Economic Evidence for a Dynamic Policy Environment (pp. 1–25). Montreal and Kingston: McGill-Queen's University Press.

Zhou, M, & Xiong, Y. S. (2005). The multifaceted American experiences of the children of Asian immigrants: Lessons for segmented assimilation. *Ethnic and Racial Studies, 28*(6), 1119–1152.

Zsembik, Barbara Z., & Fennell, Dana. (2005). Ethnic variation in health and the determinants of health among Latinos. *Social Science & Medicine, 61*(1), 53–63.

Zeng, Z., & Xie, Y. (2004) Asian-Americans' earnings disadvantage reexamined: The role of place of education. *American Journal of Sociology, 109*(5): 1075–1108.

Zunzunegui, M., Froster, M., Gauvin, L., Raynault, M., & Willms, D. J. (2006). Community unemployment and immigrants' health in Montreal. *Social Science & Medicine, 63*(2), 485–500.