

Hordyk, Shawn Renee, Hanley, Jill, & Richard, Éric. (2015). "Nature is there; its free": Urban greenspace and the social determinants of health of immigrant families. *Health & Place*, 34, 74-82.

"NATURE IS THERE; ITS FREE": URBAN GREENSPACE AND THE SOCIAL DETERMINANTS OF HEALTH OF IMMIGRANT FAMILIES

ABSTRACT

Keywords: nature, social determinants of health, immigration, families

INTRODUCTION

Due to immigration procedures that screen newcomers for mental and physical health problems, Canadian immigrants arrive with fewer mental health problems than the general population (Kirmayer et al., 2011) and are in better physical health (Tremblay, Bryan, Pérez, Ardern, & Katzmarzyk, 2006). However, stressful experiences during the pre-migration, migration and post-migration phases soon cause newcomers to report significant increases in physical health problems (De Maio & Kemp, 2010; Kim, Carrasco, Muntaner, McKenzie, & Noh, 2013) and to match their Canadian-born counterparts in reported mental health concerns (Kirmayer et al, 2011). In a longitudinal survey of Canadian immigrants, researchers found that within four years of their arrival, the percentage of immigrants reporting excellent health decreased from 43% to 30%. During this time, 29% of immigrants reported pervasive feelings of sadness, depression and loneliness, an increase from 5% four years prior (De Maio & Kemp, 2010). These statistics suggest the pertinence of exploring initiatives to specifically protect and promote immigrant health.

While historically, physical and mental health difficulties have been perceived as personal and addressed through individual-based interventions, health practitioners and policymakers now recognize the impact of physical and social environments on health

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and well-being. Health-related interventions are therefore increasingly inclusive of environmental factors, both in terms of treatment and prevention. This study examines how one sample of Canadian immigrants accessed urban green spaces as a means through which to address their health and well-being. Specifically, these newcomers identified how experiences in nature allowed them to mitigate the negative impact of three social determinants of health identified in the literature as common to immigrant families: inadequate housing, social isolation, and psychological stress.

The social determinants of health conceptual framework

The social determinants of health framework challenges previously held explanatory models of illness and disease wherein individual traits and behaviours were viewed as the primary and often sole sources of illness. The framework emphasizes that social processes arising from structural factors give rise to health and disease outcomes (Solar & Irwin, 2010). These social processes can be modified in positive or negative directions by intermediary variables: psychological, social, material and biological (Solar & Irwin, 2010). Long-term, adverse social and material living conditions are perceived to have the potential to increase physiological and psychological stress responses that, in turn, increase propensity to disease and/or unhealthy coping behaviours (Marmot & Wilkinson 2006; Raphael, 2009, Solar & Irwin, 2010). In the face of these adversities, individuals and communities may at times manage to shift these social and material living conditions in their favour, thus acting as agents of change in their own health and well-being trajectories (Solar & Irwin, 2010).

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The World Health Organization included *the effects of urbanization and associated living conditions* in their conceptual framework as one of nine overarching social determinants integral to health and well-being (Solar & Irvin, 2010). Though early versions of the framework made passing reference to the positive impact of the aesthetic quality of urban vegetation (WHO, 2007), the most recent working models do not mention the place of urban vegetation or any aspects of urban nature in health and well-being outcomes. This runs contrary to a growing body of literature demonstrating that nature in urban settings offsets risk factors associated to social determinants of health.

In contrast, the “Healthy Cities” initiative launched by the World Health Organization in 1986 recognized the fact that cities themselves are “habitats” whose conditions can be ameliorated with the goal of health promotion (Ashton, Grey & Barnard, 1986, p.6). This health promotion approach shifts from a sole dependence on health structures toward commitments to improve city environments through intersectoral collaboration, community participation and capacity building (Ashton, Grey & Barnard, 1986; de Leeuw, Tsouros, Dyakova, Green, 2014; Heritage & Dooris, 2009; Twiss, Dickinson, Duma, Kleinman, Paulsen & Rilveria, 2003). Specifically, a community capacity approach valorizes the ability of individuals and communities to identify social and health problems, to conceptualize solutions, and to implement action to achieve these solutions (Labonte & Laverack, 2001).

Health and contact with nature

Urban planners draw on the term “green space” to refer to the presence of vegetation in urban settings, usually human-designed. Green space has been contrasted to wilderness space, commonly perceived as wild and untouched. Though in reality, few

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natural spaces remain that have been unaltered by human interaction (Cronon, 1996).

Urban green space is comprised of elements such hills and rocks, grass, trees, flowers, fields, gardens, parks, and forests (De Vries, Verheij, Groenewegen, & Spreeuwenberg, 2003). A debate is surfacing about whether traditional definitions of green space have neglected to distinguish the importance of the “blue space” (presence of water) so often incorporated into green spaces. Some have made no differentiation between the two; others see aquatic environments such as lakes, creeks, and urban seaside as distinct (see Völker & Kistemann, 2011; White, Smith, Humphryes, Pahl, Snelling, & Depledge, 2010). Health researchers have traditionally emphasized nature’s impact through the visual sensory experience of nature. More recently, soundscapes (Farina, 2004 ; Yang & Kang, 2005), olfactory sensations (Him Fujii & Cho, 2010) and tactile sensory nature experiences (Koga & Iwasaki, 2013) have been explored in studies concerning nature and human health.

Three theories have dominated explanations of why non-threatening forms of nature in urban green space positively impact health and well-being. *Stress reduction theory* posits that nature contact reduces physiological states of stress by altering the mechanism of the parasympathetic nervous system (Ulrich, Simons, Losito, Fiorito, Miles, & Zelson, 1991). *Attention restoration theory* hypothesizes that experiences of “soft fascination” in nature can create a state of attentive awareness that in turn restores cognitively fatigued minds (Kaplan, 1995). The theory of *Biophilia* states that humans are born with an innate, evolutionary affiliation to non-threatening forms of nature and are positively affected when this contact is revived (Kellert, 2002; Wilson, 1984).

Outside of these formal theories, studies have also demonstrated that affective responses

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to nature may facilitate attachment to new environments and places (see Bow & Buys, 2003; Riley, 1992). Furthermore, contact with nature has been demonstrated to parallel the early child-caregiver attachment relationship and can be experienced as a responsive and nurturing presence (Hordyk, Dulude, Shem, 2014).

Urban greenspaces are a catalyst to promote healthy lifestyles and (Bell, Wilson, & Liu, 2008), which in turn impact rates of coronary heart disease, cerebrovascular illness, cancer, and obesity (Willis & Crabtree, 2011). Green environments nurture social development (Mass, VanDillen, Verheij & Groenewegen 2009; Seeland, Dübendorfer, & Hansmann, 2009) and are a protective factor for health inequality related to income deprivation (Mitchell & Popham, 2007). In response to this growing body of evidence, health policy makers have begun to consider urban nature as a means through which to promote personal health and healthy cities (see Condarson, 2012; Health Council of the Netherlands, 2004; Nilsson, Sangster, & Konijnendijk, 2011; OPENspace, 2014).

The newcomer situation is unique, however, in that they are often adapting to an unfamiliar natural world of flora, fauna, climate and landscape. Childhood memories and experiences, a key factor in predicting adult behaviours toward nature (Wells & Lekies, 2006) may have little relevance to the new environment. Immigrant parent guidance concerning their children's nature experiences may also be limited as they may be unfamiliar with safety norms concerning local food, plants, climates and geographies.

Studies specific to immigrant populations have nevertheless found that embodied practices in nature serve as a bridge between host and home country (Morgan, Rocha, & Poynting, 2005; Wen Li, Hodgetts, & Ho, 2010). While gardening, familiar traditions from the design of garden spaces to digging soil, watering seeds, harvesting and food

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preparation provide continuity in agricultural and culinary traditions (Corlett, Dean, & Grivetti, 2003; Lee, 2001; Minkoff-Zern, 2012). Likewise, memories stimulated by bodies of water (Cadzow, Byrne, & Goodall, 2010), forests (Kwiatkowski, 2004), parks and greenhouses (Rishbeth, 2004a, 2004b; Rishbeth & Finney, 2006) serve to bridge home and host country.

The literature, however, remains largely silent on whether contact with nature in urban settings potentially reverses the decline in mental and physical health noted in many newcomer populations as they settle into their new societies. This study sought to fill this gap by examining whether migrant families experience contact with urban green spaces as promoting their own health and well-being. To examine the question as to whether urban nature has the salutary effects in immigrant populations as have been previously identified in non-immigrant populations, social determinants of health pertinent to migrant populations were identified. These determinants included housing (Germain, 2009; Hordyk, Ben Soltane & Hanley, 2014); social cohesion (Zhang & Ta, 2009); immigration status (Oxman-Martinez, Hanley, Lach, Khanlou, Weerasinghe & Agnew, 2005); age, income, and gender (Newbold & Dunforth, 2003); education and language proficiency (Chiswick, Lee & Miller, 2008), disruptions in parent-child relationship, prior trauma, and separation from attachment relationships in one's home country (Aycan & Berry, 1996; Yakusho, Watson & Thompson, 2008; Yakusho, 2010) and psychosocial stressors specific to migration trajectories (Kirmayer et al., 2011). The qualitative study discussed in this paper explored whether participants accessed nature to address the negative impact of any of these social health determinants.

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RESEARCH DESIGN

A hermeneutic phenomenological approach was used to access immigrant parent and children's lived experiences of nature in urban contexts. This research approach necessitated personal attunement to one's own location in culture, time, place, space, and language, and a reflexive awareness as to how these realities would potentially limit what is viewed as meaningful (Van Manen, 1990). Data collection included non-verbal methods such as drawing and story-telling, allowing the researcher to elicit in-depth responses from research participants for whom language and age differences made verbal communication difficult. A university ethics review board provided approval for the study.

Seven immigrant families consisting of thirteen children (ages 7-13), and ten adults participated in this study. Interviews of each family lasted 1.5 to 2.5 hours. Participating families came from the Caribbean, Central Asia, Western Europe, Central America, South America, North Africa, and West Africa. The families had been recruited through welcome classes offered to immigrant children in a local school district. The range of time that the families had spent in Canada ranged from six months to seven years. Community workers asked families if they would be interested in participating in a study examining the role of urban nature in the immigrant adaptation process.

Three forms of data collection were used. First, members were provided a sheet of paper, about 2.5 by 5 ft upon which to draw nature in their home country. Families were given a choice about whether they wanted this to be one shared drawing or a collection of individual drawings on the page. Each family member was then invited to describe their illustrations of nature.

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Second, families were asked the “5 senses popcorn question.” They were instructed to pay attention to the first word or image that popped into their minds in response to a question posed by the researcher and to record their response through writing or drawing. Questions were then posed one at a time, “*what is the first thing that pops into mind* when asked to name one thing you have *tasted* in nature in Canada? Then, one thing you have *smelled? touched? heard? seen* in nature since arriving to Canada?” The popcorn questions were designed to elicit spontaneous associations of contact with nature, theorizing that these questions were more likely to give rise to responses with affective and not solely intellectual components. Later, in sharing their responses in the family context, both children and adults were invited to tell any associated stories.

The third part of the family interview consisted of a semi-structured interview with parents. Children were given the option to join in this dialogue. These questions centered on nature’s influence on children’s psychosocial and physical adaptation process as related to health and well-being.

RESEARCH TERRAIN

Montreal’s average temperatures range from -14°C/7°F in the winter to 26°C/80°F in the summer. Extreme high and low temperatures couch these averages, leading to unusual embodied experiences in which the cold dry air in winter causes lungs to spasm, skin to freeze and eyes to water, while hot, humid summer air results in sticky bodies, low energy levels and potential overheating. Montreal’s winter weather typically lasts six months with snowfall beginning in November and extending into April. In late December, the sun rises and sets within 8.5 hours’ time and in June, the sun remains present almost twice as long.

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The participants in this study were primarily drawn from a neighbourhood known to receive newcomers. 75% of the residents in this area rent their dwellings, a high percentage of residents live in conditions that are inadequate due size, cost, and the physical condition of apartments. **Montreal lags behind** other large Canadian cities in terms of overall greenspace, having less than half of that in Canada's largest city, Toronto, for example (MUSE, 2014). The average amount greenspace in the neighbourhood in which study participants were housed is only half of what the World Health Organization recommends: 0.457 hectares for 1000 persons versus the recommended 0.9 hectares for every 1000 persons (MUSE, 2014).

FINDINGS

Participants in this study identified the obstacles in their settlement adaptation process as social isolation; language difficulties; underemployment or unemployment; inadequate housing conditions; noise pollution; transportation difficulties; and systemic barriers in health, education and government institutions. Each barrier potentially contributed to the development of physical and emotional health symptoms.

The immigrants in this study spoke of their process of adaptation not as detached and incorporeal selves but as embodied selves: physical, emotional, spiritual, cultural, and sentient beings. Embodied practices in nature – the unconscious, sensory, reflexive interactions that participants had with the natural environment – served as a protective factor in the face of these hardships. Specifically contact with nature was most consistently noted to mitigate the negative impact of three social determinants of health:

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inadequate housing conditions, social isolation and the migration stress experienced by the caregivers (adults) in the family.

Inadequate housing as a social determinant of health

Inadequate housing was identified as a hardship in the adaptation process for most of the families who participated in this study. Participating families were affected by recent trends in which affordable housing had decreased and vacancy rates had fallen (see Germain, 2009). In addition, some had been confronted with discrimination when they looked for housing, an experience familiar to visible minorities in Montreal (see LeLoup & Zhu 2006; Rose & Charette, 2104). As will be discussed below, immigrant families drew on urban green spaces to reduce physiological and relational stress caused by poor housing conditions.

“What was it that turned things around?”: the impact of urban nature on housing conditions

A family of four was interviewed in their small one-bedroom basement apartment located on a busy street. When asked for an immediate association to aromas of nature in Canada, one of the “popcorn questions”, both children in the family listed the odour of car fumes coming through their window. Their mother discussed the difficulty of having no outdoor nature space outside their apartment, a contrast to what they had before, a large courtyard in their village in Western Africa. She reflected:

Back home, you always have space. You have your home. We have our courtyard, the gardens. You don't have to go inside. In the courtyard you breathe. You can go say hello to the neighbours... We have fun. It's not closed like it is here.

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To cope with these living conditions, the family spent hours in a park located three blocks from their home.

This story was not unusual. For most participants, the housing that they could afford was less comfortable and spacious than their home country dwellings had been. Hyacinthe¹ had come from a Caribbean island as a tourist, attained refugee status, then permanent residency after which she sponsored her daughters. Now, having gained residency, a two-bedroom apartment housed her, her two daughters, her two brothers and a family friend. She had access to a shared yard outside of her apartment that her daughters frequented throughout the varied seasons. During the family interview, the daughters proudly took me on a long tour of their small courtyard in which they demonstrated how they made the best of the limited nature access that they had. They described the games that they played, noting details such as mouse tracks in the snow and a large tree overhanging the property and the placement of the neighbour's trash in their play space.

For Elena, a family courtyard opening to a Central American desert had been her back yard while growing up. On arriving in Montreal with her husband and young daughter, she found parks essential to coping with an inadequate housing situation (busy street, no backyard or even a balcony for escape). She explained; "We lived in a small apartment. But what was it that turned things around so that this is not such problem? We walked one block, two blocks and we arrived at a park. For us, this is marvellous."

¹ All participants have been given pseudonyms

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Her words “turned things around” reflect the significant difference between her experience of her living conditions before and after this park was discovered.

Marcela emphasized the important of parks in terms of child activity and expression. She spoke at length about the South American coastal trees and ocean beaches that had once been her childhood playground. Likewise in her home country, her daughter could “play, jump, yell, and listen to music” indoors without disrupting anyone. Now in Montreal, the apartment was not only small but had what she called “cardboard walls” between her and her neighbour's dwelling and her neighbours were quick to complain about her daughter’s movements. Marcela was at a loss to imagine how she would cope with her housing situation without ready access to urban green space for herself and her daughter.

Now I don't have much money and I have a one-bedroom apartment that is small but we have a park like this one close to us and this helps us a lot. If we did not have a place like this to play in every day, I don't know. I think that...[her voice trails off] ... I don't know.

Marcela’s words reflect the sense of loss that parents can feel when finances limit choices in caring for self and children. Parks for her were an indispensable resource to which no other viable alternative appeared to exist.

Selena articulated the impact that lack of urban green spaces can have on children. She reported that without adequate time playing outdoors, her 9-year-old daughter Ema became too high-strung. She stated that Ema needed places where she could walk, climb, shout, and discover through experience. Parks provided her with the freedom to do so. She as a mother adjusted to this expression of physicality. If Ema hurt herself or got

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dirty, this was for Selena, as a mother, part of the “outdoor experience” as well a part of her child’s developmental process.

Social cohesion as a social determinant of health

A strong relationship exists between social cohesion, well-being and health. Immigrant parents who are socially alienated are at greater risk of depression (Miskurka, Goulet & Zunzunegui, 2012) and psychological stress (Su & Hynie, 2011). Parents spoke of periods during their settlement process in which lack of friendships at home, work or school led to isolation for their children as well as themselves. They described how conversations with neighbours under the shade of the trees lining the sidewalks or encounters with families sharing the park spaces nurtured the development of friends and acquaintances.

Outdoor encounters

Families arriving with children over 3 years of age found that activities in urban parks provided unique family-bonding opportunities while increasing the likelihood of meeting other families in the Montreal community. Several parents expressed appreciation for the many free and accessible family park activities such as sledding and skating, events that allowed them to get out of the house in winter and to be outdoors with others.

Gerardo identified the importance of accessibility; “You might think that you have to have a car to get into nature but with a big park like Mount Royal... it is accessible for everyone... People skate, cross-country ski, snowshoe...” (see Figure 1). Gustavo, father of two, explained that his family had been isolated for the first several

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months upon arrival as all energies went into meeting basic survival needs. When they met another family from their home country, they found that parks provided a fun context within which to develop this burgeoning friendship.



Figure 1. Winter, Parc Mt. Royal by S Montigne, Les Amis de la Montagne

Maintaining social ties with home country: “The trees and leaves will always be at their side”

As social relationships take time to develop in the host country, the maintenance of social ties with family and friends left behind can serve as a protective factor for immigrant families (Suarez, 2000). Nature traditions and common components of nature linked individuals and families.

Ruya had recently said good-bye her 8-year-old friend who would be going back to live in her home country in North Africa. This separation was a familiar experience for Ruya who herself had immediate family members on both sides of the ocean and had lived straddled between both countries. Within the context of these transitions, she

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described nature as an active, consistent, and empowering presence linking her to distant friends and family, here for her and at their side. She explained:

Nature always stays in her place...but gives us the courage to travel and move because she knows she will always be there. Your family and your friends go to other countries where they will go and stay forever. The trees and leaves will always be at their side.

Other families maintained an affective link to those in their home country through the cultivation of plants. Some had been planted, not because they would bear fruit, but because they were reminiscent of home country. Claire's family pointed out an avocado tree that they were growing in a container outside of their basement windows; construction and traffic dust covered its leaves. Indoors, peanut plants were thriving in a windowsill. Selena had taken advantage of the sun coming into her kitchen window to germinate several seeds that had come from her cooking ventures. A thriving lemon tree grew in the living room. In each case the plants were more suited to the South American climate from which she came. The displaying of these plants was accompanied by home-country stories within which loved ones were embedded.

Identifying with the locals: "You see the nature, trees, gardens and to what extent people are conscience of their social responsibility"

Participants described participation in local environmental practices as a means through which they developed social cohesion with their host community. As local practices concerning environmental conservation, preservation and sustainability became apparent over time, immigrant families integrated these practices into daily life. They

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described how they engaged in practices of recycling, picking up garbage, and of becoming attentive in the care of local flora and fauna.

Lien proudly noted that on a recent camping trip, she and her family had noted the recycling containers and had duly placed their plastics and cardboards there alongside the other campers. Selena, who had migrated between four continents in her adult life described how conservation awareness facilitated her insertion into the city: "You learn from this new society. You have a new education concerning nature and you could say that it energizes you because it's all a part of integrating into the new country." At times children were the instigators of this action, having been socialized about these practices at school. At other times, community centers were the primary influences.

Psychological stress as a social determinant of health

The capacity of contact with non-threatening forms of nature to reduce stress has been consistently demonstrated in the literature (de Vries, van Dillen, Groenewegen, & Spreuwenberg, 2013; Pieterse & Pruyn, 2008; Wells and Evans, 2003; Ward Thompson, Roe, Aspinall, Mitchell, Clow, & Miller, 2012). Few studies have examined however, whether unfamiliarity with flora, fauna, landscape and climate prevents these stress-reducing capacities from benefiting migrating populations. Findings indicated that contact with nature offset the impact of stressful settlement experiences even, when immigrants found themselves in nature environments foreign to what they had known.

"Far from noise, far from problems, far from work": urban nature and stress

Sensory encounters in nature were a protective factor in the face of immigration-related hardships. Participants spoke of diverse sensations in illustrating nature's pleasurable and calming effects; whether seeing a blanket of white snow, listening to

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leaves rustling in the wind, smelling the fragrance of flowers or trees, hearing the song of birds or the tactile pleasure of having garden soil run through fingers. Participants consistently described how brief, yet pleasurable sensory experiences would create momentary distance from mental preoccupations. As one mother stated, she would feel transported “far from noise, far from problems, far from work” when in nature.

During her family interview, Grace spoke poignantly of her stress of waiting on the immigration status of her family. Bureaucratic government regulations had resulted in a delayed response to her request for Canadian residency. It had been three years since she and her two children had arrived in Canada to join her husband. He had arrived five years prior on a student visa. Since arriving, Grace was not legally permitted to attend school, work in her profession or return to visit her family. In the midst of this extended time of waiting, her mother had passed away in her home country. She could not go back for the funeral while her documents were being processed. She stated that the stress of this waiting had had an impact on her emotional and physical health to the point where her symptoms frequently kept her from participating in daily activities.

Against this backdrop, Grace spoke of how her attentiveness to the beauty of nature in the city, whether the flowers lining the sidewalk of her church, or awareness of the trees lining her street, helped her to cope. Of these encounters with nature she remarked how she found nature to be “enjoyable” and added “nature does me good.” Though simply stated, her words clearly demonstrate how contact with nature had affected her health and well-being in a way she indicated that her visits to medical clinics had been unable to achieve.

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For some, nature experiences served as metaphors, providing perspective and meaning in the face of difficulty. As one participant explained:

Nature surrounds us everywhere. I can not live closed up in a place if there are no trees, if there is no contact with nature, with the air, with plants, with animals and everything that nature is made of... It's an energy. It renews me and gives me hope and gives me meaning.

In the context of the emotional “ups and downs” of her immigration experience, Montreal’s four seasons provided Marcela with orientation and perspective, offering her some perspective concerning the stress of unemployment. At the time of our interview, Marcela was over two years into a fruitless job search, a challenge shared by many educated, professional immigrants who are often paradoxically expected to have Canadian work experience before being hired in Canada.

Marcela described how the four seasons gave her perspective. In speaking of winter turning into spring she stated; “with the different seasons, we can see that everything has its place... There is a time to do something in life, there is a time to rest.” The seasons served as a reminder that she would not always remain professionally inactive. Moreover, by viewing unemployment as a resting time in her own cycle of life, her own stress about finding work was abated; she could appreciate what was going well:

One thing that I can say is that seasons here make you appreciate things. The fact that there is snow for four months, five months, (and) there are no flowers; the fact that spring arrives and there are flowers and leaves everywhere makes the difference, and you see the difference ... I think to have lived the seasons makes me appreciate many things in all areas.

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She elaborated on how nature helped her to cope with stress by allowing her to remain connected to her spiritual self in times of struggle and to be thankful for what she did have.

FACTORS IN ACCESSING NATURE'S HEALTH BENEFITS

Results suggest that there were three interrelated factors contributing to families accessing nature's benefits in their health and well-being trajectory: personal receptivity and meanings attached to nature, prior nature experiences, and local mentoring.

Personal receptivity

The affective, cognitive and physiological state of the individual at the time of the encounter with nature determine the degree to which positive outcomes are experienced (Ulrich, Simons, Losito, Fiorito, Miles, & Zelson, 1991). Adults consistently referred to a moment in time when they became attuned to an aspect of nature that they had otherwise been unaware of as they went about their daily lives. These encounters occurred in spontaneous and unplanned moments: a sudden awareness of the fresh snow covering the ground, the chattering of the squirrel, the brilliant oranges and reds of autumn leaves, or the fragrant and colourful rose bush growing along a sidewalk. These moments were not forgotten once they had occurred but continued to resonate.

Though parents and children in this study were not asked to speak directly to the meaning that they assigned to nature, traces of these viewpoints were evident in the interviews. Nature representations included plants, animals, land formations, waterways and sky. In several nature drawings, participants drew self-representations as interacting with nature and not as detached observers. Some spoke of their encounter with nature as

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an interesting and out-of-the-ordinary phenomenon, others as a relational encounter, still others, as a spiritual place where they could find beauty, silence or a new perspective.

The meanings that had been assigned to nature impacted how nature's salutary effects were drawn upon. For example, an out of the ordinary phenomenon may not repeat itself and would therefore be filed as memorable experience while the effects of a silent or peaceful environment could be sought out again and again.

Prior nature experiences

Parents who accessed nature for their families had done so as children. These findings are consistent with research indicating that childhood perceptions and beliefs about the natural environment are rooted in their sensory experiences and factor into the nature attitudes and behaviours that continue into adulthood (Ward Thompson, Aspinall & Montarzinon, 2007). Included in these attitudes is their willingness to find strategies to overcome the barriers that might inhibit their nature engagement (Asah, Bengston, & Westphal, 2012). The attitudes and behaviours demonstrated by immigrant participants indicate that constancies in nature environment and phenomena are not necessary for nature values and practices to carry forward.



Figure 2: Nature as escape from urban stress

Family drawings revealed that parents who encouraged their children to be in nature had themselves experienced nature as restorative in their own childhood years. For many, nature had served as an escape from urban stress (see Figure 2). They wished for their children now in Canada also to “become

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conscious” of the “beauty” and the “richness” of nature, to develop a “love” for nature and to “admire” her. They wished their children would learn about the local trees, garden plants, insects, and landscapes; as they themselves had learned of this while working and playing as children and youth.

Gerardo and his wife had chosen to immigrate to Canada with their young family. One reason for this was their desire to have access to Canada’s wilderness spaces.

Gerardo’s home country nature drawing was that of a cityscape with mountains in the horizon. This picture illustrated memories of childhood camping expeditions with his



Figure 3. Selena in tree

father where they, equipped only with a sleeping bag and piece of plastic for shelter, left the city’s millions of inhabitants behind. When he became an adolescent, he chose scuba diving with his peers to escape what he referred to as “the big city... the stress...contamination, pollution, noise, smog.”

Scuba diving weekends included what he described as great food and sleeping conditions; “We ate seafood and slept in hammocks. It’s really relaxing.”

Wei, father of three, drew a picture of himself as boy standing in a fishing boat on a river. Large mountains rose behind him in the background; two large fish swam near his hook. Curiously, no buildings were visible in his drawing, though he explained that the river on which he fished ran through the heart of his childhood city, a city of several million inhabitants. As he spoke, it became clear that this river served as a place of refuge, an escape from the very city that encircled him.

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Selena took refuge in a tree in the courtyard of her family home when she felt overwhelmed in her preadolescent and adolescent years (See Figure 3). Due to safety issues in her city, she had been unable to leave the premises of her family dwelling when she needed to get away. She therefore escaped to the solace of a fruit tree where no one bothered her.

Each of these illustrations portray how, as youth, these parents intuitively accessed nature to mitigate the effects of urban stress and inadequate housing on their health and well-being. Upon arriving in Canada and faced with these same social determinants that placed their health at risk, they turned to their familiar coping strategy, nature.

Local mentoring

Families were clear about the importance of a third party in helping them access the nature resources that they drew upon as resource. As one mother described, immigrant families are often in survival mode when they are in the midst of learning a new language, looking for housing, searching for jobs, and enrolling their children in school. Organizing anything more on top of this can feel overwhelming. In this light, several parents spoke of school community workers and nature mentors who had been instrumental in familiarizing them with urban activities and needed preparations.

Community workers organized daytrips to orchards, a maple sugarbush, and parks. They also provided information about activities that families could embark upon alone. They educated parents on how to prepare children for extreme heat and cold. They organized a used winter clothing sale so that families could adequately dress for inclement weather. They responded to questions concerning local flora, fauna, as much

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of this was unrecognizable to a newcomer's eyes and ears. They addressed "myths" that had been circulating, clarifying, for example, that no serious animal predators inhabited Montreal's urban forests. As many families had migrated from countries in which parks were considered to be crime-ridden and socially dangerous and not a place to be with children or to meet up with friends, community workers were able to offer safety guidelines fitting to the local parks.

One parent in the study, Nina, had expressed clear ambivalence about her urban outdoor experiences. This appeared to have been due, at least in part, to a lack of mentoring. Arriving as a teenager from North Africa, she fell into a gap as immigration integration programs were designed for children and adults. She had been left to her own devices to figure out how to adapt to Montreal's climate. In her words, "I laughed. I cried. I went through all of that." She described her struggle to figure out appropriate footwear and clothing so that she might adjust to the extremes of hot and cold temperatures. She had come to the conclusion that nature was "a double-edged sword," both pleasing and threatening:

To discover it (nature), it's wow! But to have to change your daily routines. That's tough...to have to adapt to a heavy coat and walk through slush (in winter), then leave the house almost naked (in summer) when you are from a culture where you shouldn't leave almost naked...(she paused) Nature doesn't let go.

Nina's perception of nature as "not letting go," even years into her settlement process, was unique. Others had described their difficulties with snow and heat as transitory. Nina's access to urban nature remained limited due to the discomfort that she experienced several months each year.

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DISCUSSION OF FINDINGS

In this study, we drew upon a contemporary model of health, the social determinants of health framework, to identify how non-threatening contact with nature was a mechanism of health promotion in an urban immigrant population. Immigrant families were “active citizens” (de Leeuw, Tsouros, Dyakova, 2014) in their choice to access green spaces in the city as a means of personal health promotion.

Research examining nature’s impact on immigrant well-being has largely focused on how familiar sensory stimuli and repeated embodied practices in nature facilitate remembering and belonging, linking past to present (Morgan, Rocha, & Poynting, 2005; Rishbeth, 2004a, 2004b, 2001; Wen Li, Hodgetts, & Ho, 2010). Findings from this study suggest that contact with nature has a much wider impact with the potential to shift the trajectories of health and well-being and to mitigate trends in health decline found in newcomer populations. Children and parents were “active protagonists” (Solar & Irwin, 2010, p. 58) as they advocated for themselves, exercising their own agency (c.f. Dyck & Dossa, 2007) to promote their health and wellbeing.

Newcomer families did not identify urban nature as a panacea to their challenges. Those who were lodged in inadequate housing identified the need for improved living conditions. The development of social relationships continued to be a priority. The factors giving rise to psychological stress remained a concern. While seeking to remedy these difficulties, the migrant families in this study drew upon nature spaces and encounters within in their city “habitat” (Ashton, Grey & Barnard, 1986, p. 320) as a way of mitigating potential resultant health risks. The fact that families came from climates and landscapes dramatically different – deserts, jungles, oceans, and mountains – from

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those encountered in Montreal did not prevent them from engaging with nature in their new surroundings.

In light of the pressing concerns of housing, education, food, employment, and language acquisition, the presence of urban green space may initially appear to be a rather low priority. Yet families clearly indicated that immediately upon their arrival, contact with nature mitigated the negative impact of these stressors on their health and wellbeing. Healthy city initiatives must provide adequate green spaces for health promotion, especially for migrating populations at significant risk of health decline and who may, by choice or default, not access public health care services. Indeed, outdoor community-based practices may, in the long run, be equally if not more effective and cost efficient than institutional medicine in addressing mental and physical health concerns (c.f. Willis & Crabtree, 2011).

Nature and housing: Nature as an extension of home

It was not unusual for the newly arrived immigrants to settle in neighbourhoods where the housing was inadequate and substandard compared to the dwellings they had moved from in their home country. Though many hoped that this arrangement would be temporary and lead to better circumstances, the combined impact of inadequate living conditions with other migration related stressors threatened to be a health risk (c.f. Subedi & Rosenberg, 2014). During this in-between state, immigrant families accessed green spaces and outdoor nature activities to promote the physical and emotional development of themselves and their children. Urban green spaces provide a pleasant context for children and parents to be together (c.f. Taylor, Wiley, Kuo, & Sullivan, 1998). In contrast to housing conditions that threatened to inhibit children's innate urges to move,

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time spent in urban green spaces facilitated child development (c.f. Hordyk, Dulude, Shem, 2014). Simultaneously, parents were momentarily released from the confines of inadequate housing. When parents brought their children outdoors, they too explored their new environments, exercised, relaxed and gained from adult interactions.

Social Cohesion: Nature as environment for lingerings and diversions

More than the backdrop to experience, urban green space impacted individuals on personal and social levels (c.f. Rogan, O'Connor, & Horwitz, 2005). Sidewalks, parks and yards provided pleasant opportunities for people to linger a little while longer, offering spontaneous and informal gathering spaces within which social relationships were nurtured between neighbours and acquaintances (c.f. Sullivan, Kuo & Deporter, 2004).

Where social cohesion was developed through informal outdoor interactions, social capital increased through these activities that entailed calculated risk. Participants spoke with a degree of pride in having either attempted or mastered them. A sense of belonging and ownership set in. Social capital also increased through participation in nature conservation activities as families participated in recycling or in community workshops. These sport and conservation experiences in turn played a role in the development of place identity and place attachment as participants identified with locals in having tried them (c.f. Korpela, Yién, Tyrvaïnen, & Silvennoinen, 2009). This social capital was an element in the health maintenance of newly arrived immigrants (c.f. Zhao, Xue, Gilkinson, 2010).

Stress: Nature as buffer

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Parents and children who had been successful and productive wage earners or students in their home society now found themselves struggling to be recognized for their competencies in workplace or education settings. Language, cultural, social and political barriers prolonged the integration process beyond what many had expected (see Portes & Rumbaut, 2006; Stodolska, 2008). Parents and children related having experienced psychological stress as consequence. They identified how both unexpected and planned nature encounters impacted them emotionally, providing sudden ‘aha!’ moments of pleasure, offering respite from mental preoccupations, or facilitating states of relaxation. Drawings and dialogues indicate that a dynamic interaction between relaxed body, rested mind and a heightened orientation to the wider environment is at play.

FUTURE DIRECTIONS: “NATURE IS THERE. NATURE IS FREE.”

Humans have drawn upon aspects of nature for centuries and across cultures for the promotion of health and physical and psychological well-being (Gray, 1999; Sternberg, 2009). As stated by one participant, “Nature is always there. It’s free. It’s up to you to go looking.” To “go looking”, however, should not be impeded by distance, transportation costs and access fees. Furthermore, these embodied nature practices must be validated. The Western country’s medical model of health treatment may, by virtue of its force, cause newcomer families to dismiss these inherent health promotions practices.

Further studies will be needed to provide an evidence-based approach to greenspace and health, particularly in order to examine the specific impact of nature on relevant intermediary health determinants of migrant populations. In this light, a more nuanced understanding is needed concerning how variables such as age, gender, physical

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mobility, cultural perceptions of nature and previous nature encounters influence nature's salutary impact. Quantitative measurements already used in health-nature research may help substantiate participant self-reports. Portable and easy to use devices measuring physiological responses such as heart rate, blood pressure, skin conductance and salivary cortisol have been used to register the body's response to exposure to visual and/or immersive experiences of nature (Hartig, Mang, & Evans, 1991; Laumann, Garling, & Stormark 2003; Ulrich, Simons, Losito, Fiorito, Miles, & Zelson, 1991; Ward Thompson, Roe, Aspinall, Mitchell, Clow, & Miller, 2012). And in addition to the drawing, storytelling and interview methods used in this study, qualitative measurements such as photovoice (Rishbeth & Finney, 2006) or mapping (Wheeler, Cooper, Page & Jago, 2010) may explore the how personal nature histories and cultural worldviews shape the human-nature encounter.

Whether sensory contact with nature is itself a social determinant of health *or* a condition necessary for human health remains to be determined. Through this study, we have initiated a dialogue about these questions through an examination of nature's impact on three health determinants –housing, social cohesion and psychosocial stress. We recommend this paradigm as a framework through which interdisciplinary researchers may develop a systematic approach to understanding the impact of nature on health and well-being.

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Hordyk, Shawn Renee, Hanley, Jill, & Richard, Éric. (2015). "Nature is there; its free": Urban greenspace and the social determinants of health of immigrant families. *Health & Place*, 34, 74-82.

REFERENCES

- Asah, S. T., Bengston, D. N., & Westphal, L. M. (2012). The Influence of Childhood Operational Pathways to Adulthood Participation in Nature-Based Activities. *Environment and Behavior*, 44(4), 545-569.
- Ashton, J., Grey, P., & Barnard, K. (1986). Healthy cities-WHO's new public health initiative. *Health promotion international*, 1(3), 319-324.
- Aycan, Z., & Berry, J. W., 1996. Impact of employment-related experiences on immigrants' psychological well-being and adaptation to Canada. *Canadian Journal of Behavioural Science/Revue canadienne des sciences du comportement*, 28(3), 240.
- Bell, J. F., Wilson, J. S., & Liu, G. C. (2008). Neighborhood greenness and 2-year changes in body mass index of children and youth. *American journal of preventive medicine*, 35(6), 547-553.
- Bow, V., & Buys, L. (2003). Sense of community and place attachment: the natural environment plays a vital role in developing a sense of community. Retrieved from <http://eprints.qut.edu.au/00000115/01/Bow&Buys.pdf>
- Cadzow, A., Byrne, D., & Goodall, H. (2010). WATERBORNE: Vietnamese Australians and river environments in Vietnam and Sydney. *Transforming Cultures eJournal*, 5(1). Retrieved from <http://epress.lib.uts.edu.au/journals/TIC>
- Cheong, P. H., Edwards, R., Goulbourne, H., & Solomos, J. 2007. Immigration, social cohesion and social capital: A critical review. *Critical Social Policy*, 27(1), 24-49.
- Chiswick, B. R., Lee, Y. L., & Miller, P. W. (2008). Immigrant selection systems and immigrant health. *Contemporary Economic Policy*, 26(4), 555-578.
- Condarson, D., 2012 Well-being on Geographical Engagements. In Atkinson, S., Fuller, S., & Painter, J. (Eds). *Wellbeing and place*. Farnham, Surrey, England: Ashgate Pub. pp. 15-34
- Corlett, J. L., Dean, E. A., & Grivetti, L. E. (2003). Hmong gardens: botanical diversity in an urban setting. *Economic botany*, 57(3), 365-379.
- Cronon, W. (1996). The trouble with wilderness: or, getting back to the wrong nature. *Environmental History*, 7-28.
- de Leeuw, E., Tsouros, A. D., Dyakova, M., & Green, G. (2014). *Healthy Cities, Promoting health and equity-evidence for local policy and practice*.

- Hordyk, Shawn Renee, Hanley, Jill, & Richard, Éric. (2015). "Nature is there; its free": Urban greenspace and the social determinants of health of immigrant families. *Health & Place*, 34, 74-82.
- De Maio, F. G., & Kemp, E. 2010., The deterioration of health status among immigrants to Canada. *Global Public Health*, 5(5), 462-478.
- De Vries, S., Verheij, R. A., Groenewegen, P. P., & Spreeuwenberg, P., 2003. Natural environments- healthy environments? An exploratory analysis of the relationship between greenspace and health. *Environment and planning A*, 35(10), 1717-1732.
- Dijkstra, K., Pieterse, M. E., & Pruyn, A., 2008. Stress-reducing effects of indoor plants in the built healthcare environment: The mediating role of perceived attractiveness. *Preventive medicine*, 47(3), 279-283.
- Dyck, I., & Dossa, P. (2007). Place, health and home: gender and migration in the constitution of healthy space. *Health & place*, 13(3), 691-701.
- Farina, A. (2014). Human Dimension of the Soundscape: From Individuals to Society. In *Soundscape Ecology* (pp. 107-142). Springer Netherlands.
- Germain, A., 2009. A closer look at Montréal: is the housing situation for immigrants becoming more precarious? *Canadian Geographer / Le Géographe canadien*, 53(3), 342-344.
- Grahn, P., & Stigsdotter, U. K. (2010). The relation between perceived sensory dimensions of urban green space and stress restoration. *Landscape and Urban Planning*, 94(3), 264-275.
- Gray, A. (1999). Indigenous Peoples, their Environments and Territories. In Posey, D. A. (Ed.). *Cultural and spiritual values of biodiversity* (pp. 61-62). London: Intermediate Technology.
- Health Council of the Netherlands. (2004). Nature and Health: The influence of nature on social, psychological and physical well-being. Retrieved from www.forhealth.fi/pmwiki/docs/dutch-health-council-review.pdf
- Heritage, Z., & Dooris, M. (2009). Community participation and empowerment in Healthy Cities. *Health Promotion International*, 24(suppl 1), i45-i55
- Holtan, M. T., Dieterlen, S. L., & Sullivan, W. C. (2014). Social life under cover: Tree canopy and social capital in Baltimore, Maryland. *Environment and Behavior*, 0013916513518064.
- Hordyk, S. R., Dulude, M., & Shem, M., 2014. When nature nurtures children: nature as a containing and holding space. *Children's Geographies*, (ahead-of-print), 1-18.

- Hordyk, Shawn Renee, Hanley, Jill, & Richard, Éric. (2015). "Nature is there; its free": Urban greenspace and the social determinants of health of immigrant families. *Health & Place*, 34, 74-82.
- Hordyk, S. R., Ben Soltane, S., & Hanley, J. 2014. Sometimes you have to go under water to come up: A poetic, critical realist approach to documenting the voices of homeless immigrant women. *Qualitative Social Work*, 13(2), 203-220.
- Jo, H., Fujii, E., & Cho, T. (2010). An experimental study of physiological and psychological effects of pine scent. *J. Kr. I. Landsc. Arch*, 38, 1-10.
- Kabat-Zinn, J. (2003). Mindfulness-based interventions in context: past, present, and future. *Clinical psychology: Science and practice*, 10(2), 144-156.
- Kaplan, S. (1995). The restorative benefits of nature: Toward an integrative framework. *Journal of Environmental Psychology*, 15(3), 169-182.
- Kellert, S. (2002). Experiencing nature: affective, cognitive, and evaluative development in children. In Kahn, P. H., & Kellert, S. R. (Eds). *Children and nature: Psychological, sociocultural, and evolutionary investigations*. Cambridge, Mass: MIT Press. pp. 117-151
- Kim, I. H., Carrasco, C., Muntaner, C., McKenzie, K., & Noh, S. 2013. Ethnicity and Postmigration Health Trajectory in New Immigrants to Canada. *American journal of public health*, 103(4), e96-e104.
- Kirmayer, L. J., Narasiah, L., Munoz, M., Rashid, M., Ryder, A. G., Guzder, J., Hassan, G., Rousseau, C., & Pottie, K., 2011. Common mental health problems in immigrants and refugees: general approach in primary care. *Canadian Medical Association Journal*, 183(12), e959-e967.
- Koga, K., & Iwasaki, Y. (2013). Psychological and physiological effect in humans of touching plant foliage-using the semantic differential method and cerebral activity as indicators. *Journal of physiological anthropology*, 32(1), 7.
- Kwiatkowski, M. (2004). Re-creating the Polish homelandscape. *Polonia in Australia: In Drozd & Cahill (Eds.), Polonia in Australia: Challenges and Possibilities in the New Millennium Australian-Polish Community Services* (pp. 19-30). Common Ground Pub. Australia.
- Labonte, R. & Laverack, G. (2001). 'Capacity building in health promotion, for whom? And for what purpose?', *Critical Public Health*, 11(2): 111-127.
- Leloup, X., & Zhu, N., 2006. Différence dans la qualité de logement: Immigrants et non-immigrants à Montréal Toronto et Vancouver. *Journal of International Migration and Integration/Revue de l'integration et de la migration internationale*, 7(2), 133-166.

- Hordyk, Shawn Renee, Hanley, Jill, & Richard, Éric. (2015). "Nature is there; its free": Urban greenspace and the social determinants of health of immigrant families. *Health & Place*, 34, 74-82.
- Louv, R. 2011. *The nature principle: Human restoration and the end of nature-deficit disorder*. Algonquin Books.
- Maas, J., Van Dillen, S. M., Verheij, R. A., & Groenewegen, P. P. (2009). Social contacts as a possible mechanism behind the relation between green space and health. *Health & place*, 15(2), 586-595.
- Marmot, M. G., & Wilkinson, R. G. 2006. *Social determinants of health*. Oxford: Oxford University Press.
- 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.
- Minkoff-Zern, L. A. (2012). Pushing the boundaries of indigeneity and agricultural knowledge: Oaxacan immigrant gardening in California. *Agriculture and Human Values*, 29(3), 381-392.
- Miszkurka, M., Goulet, L., & Zunzunegui, M. V., 2012. Antenatal depressive symptoms among Canadian-born and immigrant women in Quebec: differential exposure and vulnerability to contextual risk factors. *Social psychiatry and psychiatric epidemiology*, 47(10), 1639-1648.
- Mitchell, R., & Popham, F. (2008) Effect of exposure to natural environment on health inequalities: an observational population study. *The Lancet*, 372(9650), 1655-1660.
- Morgan, G., Rocha, C., & Poynting, S. (2005). Grafting cultures: Longing and belonging in immigrant's gardens and backyards in Fairfield. *Journal of Intercultural Studies*, 26(1-2), 93-105
- MUSE, 2014. Greenspace. School of Environment, McGill University. Retrieved from <http://musemcgill.wordpress.com/research/urban-forestry-green-space/>
- Newbold, B., & Danforth, J. (2003). Health status and Canada's immigrant population. *Social science & medicine*, 57(10), 1981-1995
- Nilsson, K., Sangster, M., & Konijnendijk, C. C., 2011. Forests, Trees and Human Health and Well-being: Introduction. In Nilsson, K., Sangster, M., Gallis, C., Hartig, T., De Vries, S., Seeland, K., & Schipperijn, J. (Eds.). *Forests, trees and human health*. New York/Dordrecht/Heidelberg/London: Springer, pp. 1-19.
- OPENSspace, 2014. Retrieved from <http://www.openspace.eca.ac.uk/>

- Hordyk, Shawn Renee, Hanley, Jill, & Richard, Éric. (2015). "Nature is there; its free": Urban greenspace and the social determinants of health of immigrant families. *Health & Place*, 34, 74-82.
- Oxman-Martinez, J., Hanley, J., Lach, L., Khanlou, N., Weerasinghe, S., & Agnew, V. (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.
- Raphael, D., 2009. Social determinants of health: Canadian perspectives. Canadian Scholars' Press.
- Riley, R.B., 1992. Attachment to the Ordinary Landscape. In: Altman, I., & Low, S. M. (Eds). *Place Attachment*. Springer, Boston pp. 13-35
- Rishbeth, C. (2004a). Ethno-cultural representation in the urban landscape. *Journal of Urban Design*, 9(3), 311-333.
- Rishbeth, C. (2004b). Re-placed people, re-visioned landscapes: Asian women migrants and their experience of open space. In *Open Space People Space: an International Conference on inclusive Environments*. Retrieved from openspace.eca.ac.uk
- Rishbeth, C., & Finney, N. (2006). Novelty and nostalgia in urban greenspace: refugee perspectives. *Tijdschrift voor Economische en Sociale Geografie*, 97(3), 281-295.
- Rose, D., & Charette, A. (2014). In Kilbride, K.M. (Ed.). *Housing Experiences of Users of Settlement Services for Newcomers in Montreal: Does Immigration Status Matter?. Immigrant Integration: Research Implications for Future Policy, Conference Proceedings*. Canadian Scholars' Press Inc. pp. 151-169.
- Portes, A. & Rumbaut, R.G. (2006). *Immigrant America: a portrait*. Berkeley: University of California Press.
- Seeland, K., Dübendorfer, S., & Hansmann, R. (2009). Making friends in Zurich's urban forests and parks: The role of public green space for social inclusion of youths from different cultures. *Forest Policy and Economics*, 11(1), 10-17.
- Solar O, Irwin A., 2010. A conceptual framework for action on the social determinants of health. *Social Determinants of Health Discussion Paper 2 (Policy and Practice)*.
- Stodolska, M. (2008). Adaptation Processes among Young Immigrants: An Integrative Review. *Journal of Immigrant & Refugee Studies*, 6(1), 34-59.
- Sternberg, E. M. (2009). *Healing spaces : the science of place and well-being*. Cambridge, Mass.: Belknap Press of Harvard University Press.
- Su, C., & Hynie, M. (2011). Effects of life stress, social support, and cultural norms on parenting styles among mainland Chinese, European Canadian, and Chinese

- Hordyk, Shawn Renee, Hanley, Jill, & Richard, Éric. (2015). "Nature is there; its free": Urban greenspace and the social determinants of health of immigrant families. *Health & Place*, 34, 74-82.
- Canadian immigrant mothers. *Journal of Cross-Cultural Psychology*, 42(6), 944-962.
- Suarez-Orozco, M. M., 2000. Everything you ever wanted to know about assimilation but were afraid to ask. *Daedalus*, 129(4), 1-30.
- Subedi, R. P., & Rosenberg, M. 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.
- Sullivan, W. C., Kuo, F. E., & Depooter, S. F. (2004). The fruit of urban nature vital neighborhood spaces. *Environment and Behavior*, 36(5), 678-700.
- Taylor, A. F., Wiley, A., Kuo, F. E., & Sullivan, W. C. (1998). Growing up in the inner city green spaces as places to grow. *Environment and Behavior*, 30(1), 3-27.
- Tremblay, M. S., Bryan, S. N., Pérez, C. E., Ardern, C. I., & Katzmarzyk, P. T., 2006. Physical activity and immigrant status. *Revue canadienne de santé publique*, 97.4.
- Twiss, J., Dickinson, J., Duma, S., Kleinman, T., Paulsen, H., & Rilveria, L. (2003). Community gardens: lessons learned from California Healthy Cities and Communities. *Journal Information*, 93(9).
- Ulrich, R. S., Simons, R. F., Losito, B. D., Fiorito, E., Miles, M. A., & Zelson, M., 1991. Stress recovery during exposure to natural and urban environments. *Journal of Environmental Psychology*, 11(3), 201-230.
- Van den Berg, A. E., Maas, J., Verheij, R. A., & Groenewegen, P. P. (2010). Green space as a buffer between stressful life events and health. *Social science & medicine*, 70(8), 1203-1210.
- Ward Thompson, C., Aspinall, P., & Montarzino, A. (2007). The childhood factor: Adult visits to green places and the significance of childhood experience. *Environment and Behavior*.
- Ward Thompson, C., Roe, J., Aspinall, P., Mitchell, R., Clow, A., & Miller, D. (2012). More green space is linked to less stress in deprived communities: Evidence from salivary cortisol patterns. *Landscape and Urban Planning*, 105(3), 221-229.
- Watts, G., Miah, A., & Pheasant, R. (2013). Tranquillity and soundscapes in urban green spaces—predicted and actual assessments from a questionnaire survey. *Environment and Planning B: Planning and Design*, 40(1), 170-181.

- Hordyk, Shawn Renee, Hanley, Jill, & Richard, Éric. (2015). "Nature is there; its free": Urban greenspace and the social determinants of health of immigrant families. *Health & Place*, 34, 74-82.
- Wells, N. M., & Evans, G. W. (2003). Nearby nature a buffer of life stress among rural children. *Environment and Behavior*, 35(3), 311-330.
- Wells, N. M., & Lekies, K. S. (2006). Nature and the life course: Pathways from childhood nature experiences to adult environmentalism. *Children Youth and Environments*, 16(1), 1-24.
- Wen Li, W., Hodgetts, D., & Ho, E. (2010). Gardens, transitions and identity reconstruction among older Chinese immigrants to New Zealand. *Journal of Health Psychology*, 15(5), 786.
- Wheeler, B. W., Cooper, A. R., Page, A. S., & Jago, R. (2010). Greenspace and children's physical activity: a GPS/GIS analysis of the PEACH project. *Preventive medicine*, 51(2), 148-152.
- White, M., Smith, A., Humphries, K., Pahl, S., Snelling, D., & Depledge, M. (2010). Blue space: The importance of water for preference, affect, and restorativeness ratings of natural and built scenes. *Journal of Environmental Psychology*, 30(4), 482-493.
- Li, W. W., Hodgetts, D., & Ho, E. (2010). Gardens, transitions and identity reconstruction among older Chinese immigrants to New Zealand. *Journal of health psychology*, 15(5), 786-796.
- World Health Organization (2007) Commission on Social Determinants of Health 'Interim Statement'. Geneva: WHO. Retrieved from www.who.int/social_determinants/thecommission/interimstatement/en
- World Health Organization (2007) Commission on Social Determinants of Health 'Interim Statement'. Geneva: WHO. Retrieved from http://www.who.int/healthy_settings/types/cities/en/
- Willis, K., & Crabtree, B., 2011. Measuring Health Benefits of Greenspace in Economic Terms. In Nilson, K., Sangster, M., Gallis, C., Hartig, T., De Vries, S., Seeland, K., & Schipperijn, J. (Eds.). *Forests, trees and human health*. New York/Dordrecht/Heidelberg/London: Springer. pp. 375-402.
- Wilson, E. O. 1984. *Biophilia*. Cambridge, Mass.: Harvard University Press.
- Yakushko, O., Watson, M., & Thompson, S., 2008. Stress and coping in the lives of recent immigrants and refugees: Considerations for counseling. *International Journal for the Advancement of Counselling*, 30, 167-178.

- Hordyk, Shawn Renee, Hanley, Jill, & Richard, Éric. (2015). "Nature is there; its free": Urban greenspace and the social determinants of health of immigrant families. *Health & Place*, 34, 74-82.
- Yakushko, O., 2010. Stress and coping strategies in the lives of recent immigrants: A grounded theory model. *International Journal for the Advancement of Counselling*, 32(4), 256-273.
- Yang, W., & Kang, J. (2005). Soundscape and sound preferences in urban squares: a case study in Sheffield. *Journal of Urban Design*, 10(1), 61-80.
- 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, J., Xue, L., & Gilkinson, T. (2010). Health status and social capital of recent immigrants in Canada: Evidence from the longitudinal survey of immigrants to Canada. *Canadian Immigration: Economic Evidence for a Dynamic Policy Environment, Montréal and Kingston, McGill-Queen's University Press*, 311-340.