

**GREEN SPACE, BLUE SPACE AND MENTAL HEALTH IN AN URBAN**

**SETTING:**

**A PHENOMENOLOGICAL STUDY**

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## **Abstract**

**Objective:** Exposure to green space is correlated with positive mental health outcomes; however, there is a lack of qualitative studies focusing on experiences of this phenomenon. Therefore, the research objective was to examine individual's experiences of mental restoration after spending time in urban parks.

**Methods:** A phenomenological approach was used. Fifteen participants in Lethbridge, Alberta, were interviewed, all of whom used parks and believed it benefitted their mental health.

**Results:** Analysis revealed four main themes highlighted by participants, including connections to nature, connections to community, connections to themselves, and built environment features. These themes may be important aspects of the experience of mental restoration and may factor in the relationship between green space and mental health.

**Conclusion:** The results support ongoing development of a variety of urban green spaces. Further, they suggest the need for more research into the complex relationship between green space and mental health and moderating factors.

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## Chapter 1: Introduction

### Statement of Problem

Health is “a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity” (WHO, 1948/2003, para. 1). Health can be affected and enhanced by the environments in which individuals live and work. These settings are defined as physical spaces or social contexts where people engage in daily activities and where various factors, including environmental, organizational, and personal factors, work together to influence health and well-being (WHO, 1998). Given 81% of Canadians currently live in urban areas, these settings can play a key role in shaping population health in Canada (Statistics Canada, 2011). Currently, there is a growing emphasis on understanding how urban settings shape mental and physical health, particularly the built environment. Health Canada (1997) has defined built environment as

. . . part of the overall ecosystem of our earth. It includes the land-use planning and policies that impact our communities in urban, rural, and suburban areas. It encompasses all buildings, spaces, and products that are created or modified by people. It includes our homes, schools, workplaces, parks/recreation areas, business areas and roads. It extends overhead in the form of electric transmission lines, underground in the form of waste disposal sites and subway trains, and across the country in the form of highways. (p. 12)

A segment of the built environment of particular interest in the present work is natural settings within urban centres. The terms used to describe natural areas within cities are green space and blue space. Green space has been defined as “all green space of public value, including not just land, but also areas of water such as rivers, canals, lakes and reservoirs which offer important opportunities for sport and recreation and can also act as a visual amenity” (Maidstone Borough Council, 2003, p. 2). Similarly, blue space refers to all the visible water in an area and includes both man-made water features and



naturally occurring water (Völker & Kistemann, 2011). Thus, blue space can refer to water in a park setting or in an urban area: for example, an urban waterfront. Through this study, I examined the impacts that green and blue spaces have on mental well-being among urban Canadians. It was important to consider the impact of the built environment because it is an ever present aspect of life that influences population health.

### **Historical Context**

Throughout history, human health has been influenced by both the natural environment and the built environment. These influences have been both positive and negative. The subtopics of this discussion of historical context include (a) the connections to nature and health and (b) built environment and health.

**Connections to nature and health.** There is a long history of connectedness between nature and human health. Green spaces, and gardens in particular, were highly valued for their contributions to well-being in ancient times, throughout different cultures (Ward Thompson, 2011). The links between nature and mental well-being were especially strong during the twelve to fourteenth centuries (Ward Thompson, 2011). In discussing thirteenth century convents, Montford (2004) stated that the friars were acutely aware of the influence of the environment in and around the convent on health. Gardens were important parts of the convent for growing food and medicinal herbs, as well as for providing a place for recreation of the sick. In addition, meadows adjacent to the garden or infirmary were considered to be important for the “spiritual and mental refreshment” of the sick and of the convent residents (p. 56). The importance of this idea was shown in influential writings of the time. For example, in 1260, the Franciscan Minister-General Bonaventure (as cited in Montford, 2004) stated that friars having access to gardens and

open air was necessary for the advancement of “their internal devotion, their intellectual development, their virtuous example and the health of their doctrine” (p. 57).

**Built environment and health.** As European cities became more urbanised, living conditions in major cities were often cramped, unsanitary, and contaminated by fumes and physical waste from nearby factories and businesses. Historically, many advances in public health have occurred because of changes to the built environment. For example, the introduction of sewers and other sanitation initiatives have reduced infectious disease transmission in cities (Canadian Public Health Association, 2010). Urban parks specifically were thought to counter many negative aspects of urban life by providing space, clean air, and opportunity for activity (Ward Thompson, 2011).

Towards the nineteenth century, some authors work turned again towards the mental health benefits of parks and green space. In particular, Fredrick Law Olmstead (1870/2013), one of the designers of Central Park in New York City, had widely publicized ideas about the mental health benefits that urban parks could bestow on urban inhabitants. He advocated for urban planning that made space for large, mature trees along the city streets and for parks that were accessible to everyone and that provided respite from the noise, congestion, and sights of the city. In 1870, he spoke about the urbanite’s need for “receptive recreation” (p. 37): that is, receiving pleasure from one’s environment without conscious exertion.

Soon afterwards, Georg Simmel (1903/2002) described the urban environment as the “sensory foundations of mental life” (p. 12). He described an ongoing tension between individuals and the collective (i.e., the city), emotions and rational thought, and relationships and transactions between urban residents. These tensions can be generalized into the dichotomy of rural life and urban life. Urban life was described as taking its cue

from the economic transactions that form the basis of a city—leading to a life dominated by logic and money and devoid of emotions and humanity. Simmel further described the constantly changing stimuli in the urban environment as taxing on residents’ nerves, and he stated that urban residents developed a “blasé” attitude due to this overstimulation. They could only return to being able to respond appropriately to stimuli if their nerves had a reprieve from the constant stimulation. These links between mental health and urban parks remain important today, especially given the increasing prevalence and disease burden associated with mental health issues. The ideas described by both Olmstead (1870/2013) and Simmel were precursors to more recent theories of mental restoration, which will be discussed in the Theoretical Perspectives section of this report.

### **Significance of the Problem**

Despite centuries of awareness of the influence of environment on human health, there remain gaps in our knowledge of this association. In particular, environmental influences on mental health remains an area of active research. The subtopics covered under this discussion include (a) mental health and the urban environment and (b) theoretical perspectives.

**Mental health and the urban environment.** Mental illness affects one in five Canadians and is the second leading cause of disability and premature death in the country (Dewa, Chau, & Dermer, 2010). Economically, the Canadian burden in 2003 was an estimated \$51 billion in health care costs and lost productivity (Lim, Jacobs, Ohinmaa, Schopflocher, & Dewa, 2008). As an example, 366,000 disability adjusted life years (DALYs) were lost in Canada in 2004 due to unipolar depression disorder (WHO, 2009). Major depressive disorder was the 11th leading cause of DALY’s worldwide in

2010, accounting for 2.5% of global DALYs (Murray et al., 2012, p. 2207). Of particular concern is the fact that the burden of depression is increasing. Between 1990 and 2010, there was an increase of 5.4% in DALYs caused by major depressive disorder per 100,000 people worldwide (p. 2207).

The etiology of depression comprises many factors; an important one being stress (Gutman & Nemeroff, 2011; van Praag, de Kloet, & van Os, 2004). Stress refers to the biological, behavioural, and psychological responses a body produces when affected by a stressor (van Praag et al., 2004). A stressor can be anything that destabilizes the body and mind from their regular state of being (van Praag et al., 2004). It can be short-term or chronic, resulting from a single stressing event or an accumulation of many stressors (Gutman & Nemeroff, 2011). Urban environments in particular contain many stressful stimuli, such as unpredictable loud noises. Urban green space may offer an opportunity for urbanites to retreat from stressful stimuli and engage with a natural environment in a beneficial way. The majority of the research in this field has viewed the relationship between green space and mental health from an overarching salutogenic perspective.

**Theoretical perspectives.** The salutogenic model focuses on the determinants of good health (Antonovsky, 1979). It reflects the WHO's definition of health, where health is multi-faceted and not merely the absence of disease (WHO, 1948/2003). Salutogenesis postulates that humans are predisposed to become ill unless action is taken to improve health; therefore, health promoting behaviours, environments, and strategies are vital to enhance the health of populations (Antonovsky, 1979). Current research has viewed green space from a salutogenic perspective, considering exposure to green space as something that can promote good mental health. Salutogenesis is positioned opposite pathogenesis, which focuses on treatment once illness occurs. Therefore, a pathogenic

perspective might suggest horticultural therapy as a treatment for depression, whereas a salutogenic perspective might suggest exposure to green space as a protective measure or a promoter of good mental health.

Another perspective on human's relation to nature was Wilson's (1984) biophilia hypothesis, which describes human's innate need to connect to life and nature. Based on this hypothesis, Wilson further stipulated that the greater the connection is felt with nature, the greater the desire to conserve it, and the greater the benefit to human health and wellbeing. Beyond the biophilia hypothesis, literature has suggested different, though related, ways to theorize the relationship between green spaces and mental health.

Two prominent theoretical perspectives in the literature considered the relationship between green spaces and mental health specifically. The first was R. Kaplan and S. Kaplan's *attention restoration theory* (R. Kaplan & S. Kaplan, 1989; S. Kaplan, 1995). Using this theory, R. Kaplan and S. Kaplan (1989) postulated that exposure to green space allows for restoration of mental resources related to attention. Two types of attention are discussed in this section. The first is *directed attention* (S. Kaplan, 1995). Directed attention requires conscious effort on the individual's part to pay attention to something that is important, and because this process requires a conscious effort and energy, it is prone to fatigue (R. Kaplan & S. Kaplan, 1989). This fatigue leads to negative impacts on other mental processes, which in turn, rely on direct attention, such as concentration on a particular thought, perception, and the inhibition of automatic responses (S. Kaplan, 1995). A loss of capacity for directed attention leads to a psychological state where restoration is needed.

The second type of attention is *fascination* (S. Kaplan, 1995). Fascination occurs when attention is captured involuntarily and modestly by stimuli that are interesting, but

not overwhelming or sudden (S. Kaplan, 1995). An example of this would be a sunset (Berman, Jonides, & Kaplan, 2008). This is a bottom-up process, where the environment draws an individual's attention without a conscious effort on the part of the individual. This allows for direct attention to be unused and to undergo restoration (S. Kaplan, 1995). However, in order for restoration to occur, there needs to be a restorative opportunity. S. Kaplan (1995) described four components necessary for a restorative opportunity to occur, one of which is fascination. A second component of S. Kaplan's restorative opportunity is the feeling of "being away" (p. 173). This means that an individual is either physically or conceptually away from their ordinary environment. A third component is the extent to which a new environment exists. A restorative opportunity arises when an individual is immersed in an entirely new environment, not when they merely experience a new stimulus (p. 173)). The fourth component of a restorative opportunity is compatibility with what an individual wants to do (p. 173). For example, a person will not find an environment restorative, even when the environment and situation fulfills all other components of being a restorative opportunity, if the person simply does not want to be there. When these four components of a restorative opportunity exist, a restorative experience may occur, allowing the individual to regain their capacity for directed attention. These four components are often fulfilled in natural environments, and S. Kaplan suggested that this restoration can best occur in a natural environment. Attention restoration theory has been supported by experimental data linking improved directed attention and exposure to an urban green space (Berman et al., 2008).

An alternative theory is Ulrich et al.'s (1991) *psychoevolutionary theory* used to describe stress recovery (p. 207). Evolutionary perspectives argue that humans are best suited for the environment in which they evolved—a natural environment. Varied

interpretations have suggested that urban environments require more mental resources to process because they are not a human's native environment and also that humans may be more attuned to pay attention to natural environments, since this is where we evolved (Ulrich et al., 1991). Unthreatening natural environments elicit unconscious and positive emotional and physiological responses (Ulrich et al., 1991). These responses developed in early humans, when unthreatening natural environments were important for an individual's survival, which often provided food, water, and respite from dangers. These immediate, unconscious responses are emotional and also set the stage for subsequent processing and physiological and behavioural responding (Ulrich et al., 1991). For example, an unconscious assessment of a stimulus as dangerous can lead to a physiological stress response resulting in behaviour of retreating from the stimulus. In addition, someone's conscious decision to place themselves in a particular environment may be a behaviour that results from a need for restoration. Restoration may also occur in natural environments in part because of an individual's belief that natural environments are best suited to deliver restorative benefits (van den Berg, Hartig, & Staats, 2007). Thus, a theoretical connection exists between the need for restoration, the belief that restoration best occurs in natural environments, behaviours that seek natural environments, and restoration itself.

The theoretical framework used in this research combined elements in both attention restoration theory and psychoevolutionary theory, and I considered stress recovery and attention restoration to be separate, but related, concepts (S. Kaplan, 1995; Korpela, Ylén, Tyrväinen, & Silvennoinen, 2008). The framework suggests a two-way relationship between attention restoration and stress, whereby stress can be a response to prolonged use of directed attention, and directed attention can occur as a result of a stress-

inducing stimulus. The most prominent link between the two theories, however, is to consider *restored directed attention as a buffer towards stress* (S. Kaplan, 1995). This relationship is shown in Figure 1. Responding to stressful stimuli may use directed attention capacity; therefore, improved directed attention may help an individual to better cope with a stressful situation. Conversely, having a depleted capacity for directed attention may lead to being less able to deal with a stressful stimulus (S. Kaplan, 1995). This inability to deal with stress properly can in turn create more stress for the individual.

Three main ways of developing this resource inadequacy have been proposed: (a) a slow depletion of the resource; (b) an appraisal of the demands of a situation and decision that the resource is inadequate; and (c) an immediate, intuitive decision that current resources are inadequate to deal with a situation (S. Kaplan, 1995). This immediate decision is akin to the unconscious responding described in psychoevolutionary theory (Ulrich et al., 1991). It has been suggested as well that different studies captured outcomes that relate to different aspects of the integrated model, emphasizing attention-related aspects of mental restoration or stress-related aspects (Hartig, Evans, Jamner, Davis, & Gärling, 2003). The mechanisms through which these aspects are related are complex and remain poorly understood.



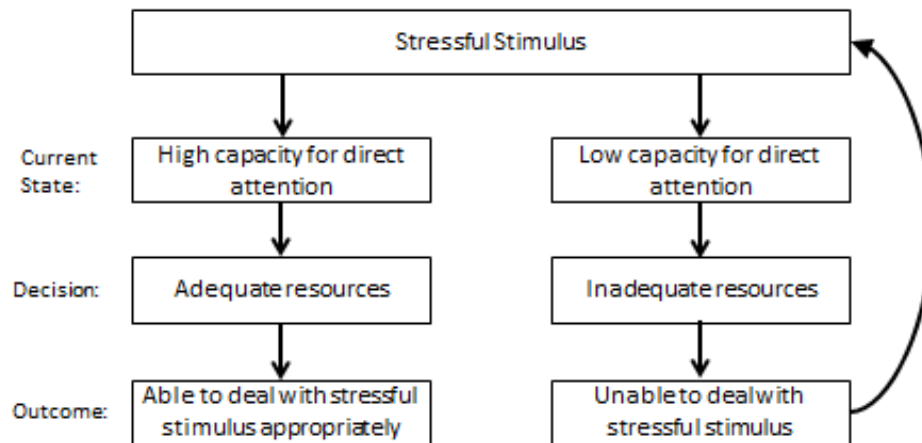


Figure 1. Attentional capacity as a buffer towards stress

### Purpose of this Research

The purpose of this research was to investigate the experience of mental restoration as a product of time spent in green and blue spaces in a sample of urban residents. Specifically, a phenomenological approach was used to examine individual experiences of mental restoration. Exposure to green space has been correlated with positive mental health outcomes (Groenewegen, van den Berg, Maas, Verheij, & de Vries, 2012). Studies in this area were predominantly quantitative and cross-sectional, though some experimental studies have compared outcomes of exposure to natural and urban environments. There was, however, a lack of qualitative studies examining the experience of mental restoration itself taken from the perspective of individuals undergoing this experience.

A qualitative study is important for understanding the meaning people attribute to mental restoration and how it impacts their lives. Using this design, one can explore *how*

the built environment influences experiences of mental restoration through the eyes of participants themselves. Most research in this field has derived research questions from theory. As a result, data collection can be limited to concepts related to specific perspectives. The open-ended research questions that develop from a qualitative approach are designed to draw out participants' subjective experiences.

The first research question for the proposed study was: How do urban parks contribute to the mental restoration of park users in Lethbridge? This experience of mental restoration was investigated using a qualitative phenomenological approach, using in-depth interviews with people who self-identified that they have experienced mental restoration after spending time in an urban park. It is important to better understand how people experience this phenomenon and how it relates to their decision to spend time in an urban park. A second question asked: How do park users experience the different features of an urban park, and what meanings do they attribute to them? This was an important inquiry because it helped increase the understanding of which aspects of the built environment best support mental restoration in these spaces. This understanding can inform urban designers, city planners, and policy makers as they invest in and plan urban green spaces. It was also anticipated that this research would be of interest to community groups who own or have stewardship over urban green spaces.

## **Chapter 2: Literature Review**

A growing number of Canadians live in cities. Urbanization has been occurring rapidly for more than a century. Currently, 81% of Canadians live in an urban area (Statistics Canada, 2011). Statistics Canada (2011) defines an urban area as a center with a population above 1,000 people, or 400 persons per square kilometer. The built environment in cities helps to shape many human behaviours and impacts the health of city dwellers (Tucs & Dempster, 2007). Urbanization is ongoing; by 2050, it is estimated that 86% of Canadians will live in cities, making the impact that the urban built environment has on health increasingly relevant (United Nations, Department of Economic and Social Affairs, Population Division, 2012). City parks are green spaces that are often available for use by residents and can be highly valued resources for relaxation and to maintain a healthy lifestyle. The theory of person-environment fit can be used to examine how the interaction between the person and the green space environment can influence mental health.

Person-environment fit theory postulates that an increase in the congruence between a person and their environment, the more successful the outcome will be (Pargament, 1986). It is based on the idea, rooted in work of Lewis Mumford, that behaviour is influenced by both the person and the environment, and that optimal outcomes occur when there is balance between these two factors. Mumford described how urban planning must be done with an eye to the social effects of modifying the environment (Mumford, 1968/2009). He believed that the excessive development of car-centered cities and highways lacked balance and regard for the human aspects of the person-environment dichotomy (Goist, 1972). These ideas influenced the development of the ideas of person-environment fit.

Person-environment fit can be viewed subjectively and objectively, and can be influenced by an idealistic view of what the optimal fit or environment should be. For example, western cultures often view exposure to nature as something positive for wellbeing. Thus, this idealized view of a natural environment may influence a person to have inflated expectations of the outcome of their time spent in a park. A dissonance between expected and actual outcomes can cause stress and tension, further depressing wellness outcomes. Further, a misfit between the person and the environment can lead to poor outcomes. It is important to note, however, that fit is a dynamic concept. Fit between a person and his/her environment is different in different environments, at different times, and when he/she has different goals (Pargament, 1896). Psychological interventions can be seen as attempts to increase the fit between a person and their environment (Pargament, 1986). Person-environment fit is also related to social integration and other markers of community belonging (Beasley, Jason & Miller, 2012). A greater degree of person-environment fit may indicate facilitated social integration; both concepts are linked to positive mental health and wellbeing outcomes.

Literature has suggested that spending time in parks, green spaces, and in nature can have a positive effect on mental health outcomes (Bowler, Buyung-Ali, Knight, & Pullin, 2010). These experiences can reduce stress, improve concentration, and restore some mental states; in particular, attention (Bowler et al., 2010). The purpose of this chapter is to review the relevant literature on green and blue space and mental restoration. A search strategy was used to guide the literature review.

### **Search Strategy**

Through this literature review, I aim to show the breadth and depth of this research field. My search strategy focused on peer-reviewed articles from the past 10

years. Seminal publications from earlier periods were also included. The online databases Academic Search Complete and PsycInfo were searched using all combinations of one environmental term for green space and natural environment and one mental health term from the following: mental health, depression, psychological stress, and urban health. Terms were searched as key words and subject headings where available. Bibliographies of key papers were also scrutinized to identify other important publications. Studies were included if they measured or considered exposure to nature and used outcome measures related to health and wellbeing. Exposure to nature could be direct (i.e., being in a park) or indirect (i.e., viewing nature through a window or in a video). Twenty-one studies and three systematic reviews in this field of research met inclusion criteria and were included in this review; they have been structured under the following categories: (a) self-reported health and affect; (b) physiological measures; (c) physician measured morbidity and mortality; (d) physical activity, mental health, and green space; and (e) determinants of restoration. The review is structured according to these categories. Within each category, studies with various designs and systematic reviews are examined. Throughout studies reviewed, two prominent theoretical perspectives are commonly used in the literature.

### **Summary of Research Findings**

Studies reviewed approached their research questions predominantly from one of two theoretical perspectives: (a) attention restoration theory or (b) psychoevolutionary theory (R. Kaplan & S. Kaplan, 1989, Ulrich et al., 1991). The theoretical approach influences the outcome measure used in each study. By including studies in this review that used both theoretical perspectives, I have been able to describe a more complete picture of the research in each category. Some authors have combined elements of the

two theories and considered the combined benefits of attention restoration and stress reduction under the label of *restoration* (Korpela, Ylén, Tyrväinen, & Silvennoinen, 2008, 2010). Thus, the term restoration is often used more broadly than in attention restoration theory to describe a multitude of restorative outcomes related to mental health, including affect and physiological measures such as heart rate, blood pressure, salivary cortisol levels, and skin conductance. The five outcome categories used in this review can all be conceptually linked to stress, as will be described in the coming sections, beginning with self-reported health and affect.

**Self-reported health and affect.** Four studies and a systematic review on self-reported affect and health were identified (see Table 1). The systematic review identified 25 studies looking at direct benefits of exposure to green space (Bowler et al., 2010). Specifically, Bowler et al. (2010) examined whether an activity, such as walking or jogging, done in a green space results in greater benefits than the same activity done in an urban environment. The direct benefits of green space represent the difference in benefit of doing this activity in the two settings, rather than capturing the benefits from the activity itself. The studies included in the systematic review were largely experimental, examining short-term, self-reported mood changes after exposure to green space, or cross-sectional, examining overall health ratings and amount of green space near the home. Where the exposure variables were similar (i.e., walking in green space vs. urban area), Bowler et al. performed meta-analysis. Overall, a moderate decrease was seen in self-reported anger, fatigue, and sadness in the green space exposure groups (Bowler et al., 2010). The findings supported the hypothesis that green space itself has a positive benefit on self-reports of affect.

A cross-sectional Canadian study by Huynh, Craig, Janssen, and Pickett (2013) examined a similar hypothesis in young people ( $N = 17,249$ ; ages 11-16). Huynh et al. examined the association between self-reported emotional well-being and neighbourhood green space, defined as the total amount of green space in a 5-kilometer radius around the school. The authors further subdivided that exposure variable into green space and blue space, for a total of three measures of natural space, which included (a) green space, (b) blue space, and (c) total amount of green space. Emotional well-being was measured by the Canadian 2009/10 Health Behaviour in School-Aged Children survey, which also measured individual and area-level covariates, allowing the authors to control for these variables in the study. The results showed a weak positive association between neighbourhood green space and emotional well-being. Given that 70% of Canadian youth aged 13-20 spend one hour or less per day outside, and thus have low exposure levels to green space, this weak association would be expected (David Suzuki Foundation, 2012). As Huynh and colleagues noted, there are many other factors that are more influential on the emotional well-being of youth. Nevertheless, the positive direction of the relation supported the idea that exposure to neighbourhood green space is beneficial for the mental health of young people.

Another cross-sectional study, this one with American adults ( $N = 265$ , Study 1), measured, instead of exposure to green space, connectedness to nature as the exposure variable (Wolsko & Lindberg, 2013). This concept is measured using the connectedness to nature scale, which operationalizes the emotional connection with nature and the extent of the connection one feels with the natural world (Mayer & Frantz, 2004).

Wolsko and Lindberg (2013) found a significant correlation between connectedness to nature and several outcome measures of psychological well-being,

including mindfulness. Subsequent studies by Wolsko and Lindberg found a further correlation between connectedness to nature and appreciative outdoor recreation.

Appreciative outdoor recreation includes activities in nature that do not attempt to change the environment, but rather focus on observing and appreciating it, such as hiking, cross-country skiing, snowshoeing, and non-motorized boating (Wolsko & Lindberg, 2013).

The authors found that people who enjoyed this type of recreation also experienced higher connection to nature and psychological benefits than those who engaged in other types of outdoor recreation.

The studies discussed thus far focused on direct benefits of green space and may not fully capture or describe the overall benefits of green space. In contrast to direct benefits of green space, benefits may be conveyed through another mechanism. For example, green space may promote social contact, which in turn may provide a psychological benefit. Comparing benefits of social contact in green space and urban environments would miss the fact that social contact itself might be *initiated* through the presence of green space, thereby heightening the impact of green space (and its related social contact) as compared to no green space (and none of its related social contact).

In order to address possible mechanisms through which green space affects health, Groenewegen and colleagues (2012) conducted a large project in the Netherlands. Groenewegen et al. used a self-reported outcome measure of overall health. The project was comprised of two cross-sectional studies. The first study was conducted at a national level. Questionnaires were mailed through physician offices to obtain self-reported health data ( $N = 12,700$ , 64% response rate; p. 998). The exposure was the amount of green space in a 1- and 3-kilometre radius around the neighbourhood. Respondents from areas with more green space felt healthier than respondents in areas with less green space



(p. 998). Respondents were also asked about levels of stress, social support, and physical activity, because these were hypothesized mechanisms through which green space affects health. The stress hypothesis was supported by the findings. Within respondents who experienced stressful life events ( $n = 866$ ), perceived health was less impacted among those who lived in areas with higher levels of green space (p. 999). Groenewegen and colleagues' findings supported Ulrich and colleagues' (1991) psychoevolutionary theory of stress reduction by suggesting that exposure to green space helps to manage or reduce stress levels. Ulrich et al.'s theory focused on physiological stress responses. The social support hypothesis was supported by findings that increased social contact in greener areas partially mediated the effect of green space on health (Groenewegen et al., 2012). Given that green space may encourage people to congregate in a common area, it follows that social contacts may be increased and also contribute to benefits of exposure to green space. However, the relationship between green space, social contact, and positive health outcomes is complex, and it is too simplistic to assume a linear relationship between environment, social context, and health outcomes.

A Swedish study further considered the social context of restorative experiences (Johansson, Hartig, & Staats, 2011). Participants ( $N = 20$ ) were exposed to either a natural environment or an urban environment by being instructed to take a walk following a pre-determined route. They were also assigned to either the alone or with-friend condition. Results indicated greater restoration occurred while alone in the park and while with a friend in an urban area. These findings have suggested that social context has an effect on restoration and that it may interact with the built environment, raising the question of how the experience of restoration differs as a result of social context. Bowler and colleagues (2010) highlighted that benefits of natural environments may be context

dependent and vary between contexts as well as between populations. Social context may have different effects depending on the intent for the visit to the green space, the activity being pursued, and whether the socialization occurs by choice or by chance (e.g., planning to meet a friend compared to running into a friend).

Overall, studies examining self-reports of health and of affect have supported the claim that green space benefits both outcomes, although variety in effect sizes indicates that the outcomes are also influenced by other variables. However, a major gap existed between these studies and theoretical perspectives because self-reported health cannot capture the measures of stress conceptualized in Ulrich et al.'s (1991) theory. In order to bridge the gap between self-reported measures of health and these theoretical ideas, studies measuring physiological responses to green space must also be examined.

**Physiological measures.** Physiological measures of restoration provide a more objective measure than self-reports, and physiological measures related to stress reduction provide a link to Ulrich et al.'s (1991) theory. Four experimental studies using physiological outcome measures are included for review (see Table 2), beginning with a study that provided support for psychoevolutionary theory.

A key study was Ulrich et al.'s (1991) examination of physiological stress recovery in stressed participants ( $N = 120$ ) in a laboratory setting. Participants first viewed a stress-inducing video, which reflected the idea that pre-existing stress is required in order for stress recovery to occur. Administering a stress-inducing video ensures that stress exists and may help to emphasize the changes in the outcome measures before and after exposure. Participants then viewed a recovery video of either a natural or urban setting. Ulrich and colleagues found that participants who viewed the recovery video of natural settings experienced enhanced recovery relative to those who viewed the

recovery video of urban settings. This was evident in measures of heart rate, which decreased quicker in the natural video condition (Ulrich et al., 1991). This suggested a role of the parasympathetic nervous system in responding to the natural stimuli, as parasympathetic responding is associated with a decrease in heart rate (Ulrich et al., 1991). However, after several minutes, heart rate increased slightly, suggesting that the reaction may not be sustained or that the nervous system reaction to these complex stimuli is not fully understood or fully captured by the outcome measures used. Other physiological measures (e.g., pulse transit time, skin conductance, muscle tension) supported the hypothesis of enhanced restoration in the nature recovery video condition (Ulrich et al., 1991).

Laumann, Gärling, and Stormark (2003) also used videos of natural and urban scenes presented in a laboratory setting as the exposure. Participants ( $N = 28$ ) first underwent a task intended to induce cognitive load and create the need for restoration of direct attention. This relates back to R. Kaplan and S. Kaplan's (1989) attention restoration theory, considering direct attention as a finite resource. They then completed a pre-exposure attention task, watched the exposure video (either natural or urban scenes), and completed a post-exposure attention task. The data showed that heart rate decreased compared to baseline while watching the nature video, but not the urban video. These results supported Ulrich et al.'s (1991) theory of physiological stress reduction. However, the data on the attention tasks before and after exposure did not yield the expected results. Laumann et al. found that those who viewed the video of natural scenes had longer reaction times after the video, which suggested they had become less able to quickly swap their attention from one side of the screen to the other in response to the cues provided. Perhaps the video of natural scenes affected participants in another way,

which was not measured and which affected their performance on the attention task. Additionally, a larger sample size may have been needed to achieve a statistically significant result for this outcome measure.

In another early experimental study, participants ( $N = 34$ ) were assigned to one of three conditions: namely, walking in nature, walking in an urban environment, or seated relaxation (Hartig, Mang, & Evans, 1991). Physiological outcome measures were blood pressure and heart rate at baseline and after the exposure. Results showed no significant difference in post-exposure measurements between groups. However, Hartig et al. (1991) pointed out that the post-exposure measurements were taken almost an hour after exposure, raising the question of when the physiological effects of environmental exposure became evident and the extent to which they are sustained. One might expect that in order for restorative benefits to be functional and affect a person's daily life in a meaningful way, some amount of restoration should be sustained. Whether this would be reflected in physiological data is unclear.

A later study helped to address this gap in our understanding regarding when physiological signs of restoration occur. Hartig and colleagues (2003) measured blood pressure continuously from participants ( $N = 112$ ) who were given a combination of exposure conditions. They first drove to the experimental site or did a series of stress-inducing tasks. Then participants spent time in a room with a view of trees through a window, then they walked through a natural environment or participants spent time in a room with no view and then walked through an urban setting (p. 111). Results indicated a larger drop in blood pressure among participants who sat in a room with a view than without and among those who walked in a natural setting compared to an urban setting (p. 116). These findings have suggested there is improved restoration of an important

stress biomarker (i.e., blood pressure) after a cognitive fatigue-inducing task when subjects are exposed to natural versus unnatural conditions (Hartig et al., 2003).

These results were supportive of Ulrich et al.'s (1991) psychoevolutionary theory of stress reduction, which argues that natural settings enhance physiological measures of stress reduction. However, the studies reviewed all examined short-term responses to environments. In order to examine whether these effects are having an impact on population-level health over the longer term, I will now review studies of green space and morbidity and mortality outcomes. In particular, morbidity of depression will be examined, as stress is considered a causal factor in the development of this mental health state (Gutman & Nemeroff, 2011).

**Physician-measured morbidity and mortality.** Physician-measured morbidity and mortality builds on studies of physiological outcome because it indicates that effects of green space can be prolonged enough to influence overall morbidity and mortality in populations. Four key studies examining physician-measured morbidity and mortality are included (see Table 3). First, a 5-year prospective cohort study of elderly residents in Tokyo ( $N = 3,144$ , 98.9% follow-up) asked participants about available space near their residence for taking a stroll, availability of parks near residence, tree-lined streets near residence, and other environmental factors (Takano, Nakamura, & Watanabe, 2002). They found the 5-year survival percentage of elderly persons (age 73 to 88) increased 15% with the availability of walkable green space near their home—a small but significant effect, especially given that the outcome was irreversible. In the Takano et al. (2002) study, participants identified availability of nearby green space. Other studies

have used satellite data or landscape assessment data to identify green space; these are more objective measures.

A Canadian retrospective cohort study also assessed mortality and exposure to green space, but used satellite data to assess nearby green space (Villeneuve et al., 2012). Villeneuve et al.'s (2012) 22-year study used income tax filings to determine location of residence and a national mortality database to identify deaths. Their main finding was that those who lived in areas with more green space had a 5% lower rate of non-accidental mortality. The largest effect was an 8% lower risk for death due to non-malignant respiratory disease among participants who lived in greener areas, even after controlling for other factors known to affect respiratory disease mortality, namely NO<sub>2</sub> levels in the air and distance to roadways (p. 55). These effect sizes were small, reflecting that there are many factors that influence mortality. However, given the large sample size and the fact the authors controlled for other relevant factors, results were suggestive of a protective role of green space near the home for non-accidental mortality.

The two cohort studies discussed so far both focused on mortality rates. A Dutch cross-sectional study focused instead on physician-reported morbidity on 24 disease clusters arranged in to seven categories (Maas et al., 2009). Overall, these covered the most prevalent diseases seen in general practice. Morbidity data were acquired through electronic medical records, which in the Netherlands are a good representation of population morbidity (Maas et al., 2009). Data on green space were acquired through a land-use database and were used to determine the percentage of green space in 1- and 3-kilometer radii around respondents' neighbourhoods (Maas et al., 2009). This method of identifying green space is more objective than self-reports, although it misses subjective information on whether residents actually visit the green space in their neighbourhoods.

The analysis controlled for socioeconomic factors, and results showed that most types of disease were less prevalent in areas with more green space (Maas et al., 2009). This effect was strongest for depression and anxiety disorders. Living in an area with 10% more green space than average in a 1-kilometer radius was associated with a 4% decrease in rates of depression and a 5% decrease in rates of anxiety disorders (p. 970). This effect was enhanced among children younger than 12. Those who had 10% more green space than average in a 1-kilometer radius around their home had 21% lower rates of depression. This association may be influenced by the fact that young children tend to spend more time near the home and, therefore, would experience increased exposure to neighbourhood green space (Maas et al., 2009).

A cross-sectional study in New Zealand focused on the effect of urban green space on mental health by examining the prevalence of treatment for mood disorders, as shown through the administrative health database for this country (Nutsford, Pearson & Kingham, 2013). The green space data was taken from a GIS database that allowed researchers to distinguish between usable green space and total green space (usable and observable). Nutsford and colleagues (2013) found that for every 1% increase in the proportion of both useable and total green space, a 4% decrease in treatment of mood disorders was seen. The green space measure used a unit of measurement that was population-weighted and averaged 0.04 km<sup>2</sup> in size. The authors found that as useable green space became nearer to this measurement area, treatment rates for mood disorders decreased. This could point to an added advantage in terms of mental health of useable green space over total green space. A strength of this study was that the researchers were able to control for area-level deprivation, since deprivation has been associated with higher levels of mood disorders.

Overall results of the key studies on physician-reported morbidity and mortality found support for reduced mortality and morbidity, especially depression and anxiety, among those with more green space near their homes (Maas et al., 2009; Nutsford et al., 2013; Takano et al., 2002; Villeneuve et al., 2012). This suggested that green space influences health and mental health. As noted by Maas and colleagues (2009), the effect of green space was largest on mental health outcomes compared to other health outcomes. This may reflect that many mechanisms through which green space affects health are related to the development of mental illness: for example, stress and social isolation. The mechanism of stress reduction relates back to Ulrich et al.'s (1991) psychoevolutionary theory of stress reduction. Stress, in particular, has been linked to the aetiology of depression; therefore, this may be one reason why green space has a larger effect on rates of depression. There are other mechanisms through which green space can affect mental health, such as physical activity.

**Physical activity, mental health, and green space.** Four studies, one multi-study analysis and a systematic review focusing on the interaction between physical activity and green space, and their influence on mental health, are discussed in this section (see Table 4). A systematic review compared the benefits of indoor exercise with the benefits of outdoor exercise (Coon et al., 2011). Eleven studies were included for analysis, nine of which reported mental health (p. 1763). Although the studies reviewed used different measures of mental health, which prevented meta-analysis, overall findings suggested a greater mental health benefit from outdoor exercise compared to indoor exercise (Coon et al., 2011). Specifically, participants experienced less anxiety, depression, anger, hostility, and fatigue after running and an improvement in various measures of mood after walking outdoors (pp. 1763-1763). The authors reported that all



the results included in their analysis were based on measurements taken immediately after exercise, and therefore, any long-term effects of outdoor versus indoor exercise could not be assumed.

An analysis of data from ten studies in the UK ( $N = 1,252$ ), all of which used the same outcome measures and population had findings similar to those of Coon and colleagues (Barton & Pretty, 2010). Measures of mood and self-esteem were taken immediately before and after participants engaged in green exercise. The authors defined green exercise as “activity in the presence of nature” (p. 3947), and activities participants did for the studies varied from farming activities to water sports. As with Coon and colleagues’ study, long-term effects of green exercise could not be assumed. Barton and Pretty (2010) identified an increase in mood, as measured by the Profile of Mood States (POMS) and in self-esteem, as measured by the Rosenberg Self-Esteem Scale (RSES), after exercise in a green environment. These improvements were most marked after five minutes of exercise, decreased as duration of exercise increased, and then increased again once the duration of exercise extended to a whole day’s length. These findings imply that benefits of green exercise occur almost immediately, and that there are mental health benefits to any length of green exercise. Results of analysis also showed that the lowest intensity exercise produced the largest positive changes in the outcome measures. The fact that a low dose, in terms of both duration and intensity, shows the most benefits has great relevance for clinical practice – green exercise may be a widely accessible, time-efficient treatment for mental health issues. Further increasing the appeal of green exercise as treatment is the fact that the increases in mood and self-esteem were greater among those with an existing mental health condition than those without. Another factor analysed by Barton and Pretty was the type of green environment in which the exercise

took place. They found that all environments allowed for a positive change; however green environments with water were associated with greater improvements in mood and self-esteem (p. 3950).

A Swedish cohort study (Annerstedt et al., 2012) picks up on the idea of environmental differences by further examining the association between mental health and particular qualities of green space (i.e., serene, space, wild, culture, lush) over a 5-year period. Green space data were acquired from a land-use database, and personal health data were acquired from a longitudinal health study. Of note, this study excluded residents of dense urban areas because of the lack of data on green spaces in these areas. Study participants were from rural, suburban areas and small towns ( $N = 9,230$ , 54.5% response rate, 77% follow-up) (p. 340). In contrast to the findings of Coon and colleagues' (2011) systematic review, Annerstedt and colleagues (2012) reported no association between green space and mental health outcomes. However, marginally significant interaction effects between physical activity and the green space qualities of serenity and space were found for women, although the very wide confidence intervals suggested that the findings are not reliable (Annerstedt et al., 2012). Further research should be done with a larger sample and with more precise measures of physical activity and green space quality. Nevertheless, these findings have suggested certain types of green space increase the amount of physical activity people do, which in turn may improve mental health because of the activity or because of the green space itself or both.

A cross-sectional study conducted in New Zealand honed in on this concept of physical activity as a mechanism of improved mental health (Richardson, Pearce, Mitchell, & Kingham, 2013). Land-use databases provided multiple objective measures of neighbourhood green space, which were compiled to determine the proportion of green

space in each census area unit, with a mean area of 5 km<sup>2</sup>. Richardson et al.'s (2013) community health survey provided self-reported measures of health, mental health, obesity, and cardiovascular disease ( $N = 8,157$ ). There was an association between green space and a significant decreased risk of poor mental health, and further, a dose-response relationship was evident between amount of green space and degree of poor mental health. Further analysis by Richardson et al. indicated an independent relationship between green space and physical activity, which prompted an adjustment to the analysis for the relationship between green space and mental health to account for physical activity as a possible mediator. Although the relationship was no longer statistically significant, Richardson and colleagues suggested that while physical activity contributes to the relationship between green space and mental health, it accounts for only part of the relationship. These results exemplified the conflicting and complex results about the association between green space, physical activity, and mental health.

Another study focused on the interaction between green space, physical activity, and mental health in the UK. Mitchell (2013) examined the use of natural and non-natural environments for physical activity and the associations with mental health (as measured by the General Health Questionnaire) and mental well-being (as measured by the Warwick Edinburgh Mental health and Wellbeing Score). These data were gathered as part of the 2008 Scottish Health Survey. By using other measures from the Scottish Health Survey, Mitchell controlled for several factors including urban/rural status, amount of physical activity, and amount of green space in the respondent's neighbourhood. Controlling for these factors was important because mental health can be influenced by both physical activity and neighbourhood green space, which may be experienced other than during physical activity (Mitchell, 2013). Analysis found that use

of natural environments for physical activity one time per week or more was associated with a lower risk of poor mental health (Mitchell, 2013). However, this association did not hold with the mental well-being score. The mental well-being score was more strongly associated with use of non-natural environments for physical activity. This interesting finding could reflect the fact that these two measures capture different, though related aspects of mental health, or also the fact that the quality of environments may differ. Sporting facilities that are open and functional must have a certain level of accessibility and quality, whereas the quality of green space was not assessed in this study. Thus, other factors such as safety, accessibility, and length of visit and of physical activity may vary between these environment types and influence mental health outcomes.

In Richardson and colleagues' (2013) study, the amount of physical activity was self-reported by participants, which may have led to inaccuracies. The amount of green space in the area was measured objectively by combining data from several databases, which was a strength; however, the use of the census area unit was a weakness. This 5-kilometer square area may have been too large to accurately measure differences in green space exposure in participants' daily lives. Other studies of green space near participants' homes have used smaller areas (Groenewegen et al., 2012) and have found that distance to green space is a determinant of green space use (Degenhardt & Buchecker, 2012). In addition, an analysis of self-reported favourite places revealed that favourite green spaces were, on average, less than two kilometers from the home (Korpela et al., 2010). An American cross-sectional study ( $N = 1544$ , 43.2% response rate) identified three measures of green space and examined their relationships with stress, social support, and physical activity (Fan, Das & Chen, 2011). The measures of green space were used to determine

green space quality and quantity; these qualities were analyzed separately for their association with physical activity. Findings indicated that amounts of park space had a small positive relationship with physical activity (Fan et al., 2011).

These findings have suggested that in order to further examine the relationship between green space, physical activity, and mental health, more precise measures of green space are required. It appears that not all types of green space affect physical activity in the same way, and this could contribute towards the conflicting results in this field. Further, when considering the mental health outcomes, many additional determinants of restoration or stress reduction can be considered. For example, more research should be directed towards the past personal experiences with nature that can act as determinants of current experiences of restoration.

**Determinants of restorative experiences.** The studies discussed to date have focused on the association between green space and mental restoration; however, little has been said about the determinants of this restoration. Determinants of restorative experiences can be individual (i.e., mood), social (i.e., whether alone or with others), or environmental factors (i.e., park features, weather). Physical features of a green space can determine the restorative quality of the environment. Five studies and a systematic review are discussed pertaining to determinants of restoration (see Table 5).

Waterside environments were frequently cited as favourite places (Korpela et al., 2010). A systematic review identified 36 articles and discussed the relationship between blue space and health (Völker & Kistemann, 2011). Blue space was identified as important because of the diversity water adds to the landscape, as well as the stress-reducing, mood-enhancing, and emotional/spiritual healing that was attributed to blue spaces by participants (Völker & Kistemann, 2011). Völker and Kistemann (2011)

categorized studies according to the main reported outcome related to blue space. There were five categories: (a) perception and preference, (b) landscape design, (c) emotional benefits, (d) restoration and recreational benefits, and (e) direct health benefits. The studies in the preference and perception category identified a preference for blue space linked to increased plant and animal diversity and increased sensory stimulation (e.g., visual, auditory, and olfactory), and overall, higher ratings of preference were seen when the environment included water (Völker & Kistemann, 2011). The landscape design category found that blue space was highly rated when included as a part of a built environment. Emotional benefits identified in this systematic review were mood-enhancing, relaxing, and related to spirituality (Völker & Kistemann, 2011). Results identified that restoration was highly correlated with areas with blue space. Direct benefits of water were identified because of people who rated blue space as highly important for overall quality of life and for spiritual reasons. Additionally, blue space can add to the depth of an environment, making it seem more like another world. This is an important attribute of a restorative environment according to attention restoration theory, as it makes the environment better suited to promote restoration (Völker & Kistemann, 2011).

In another investigation of blue space, White et al. (2010) used photos of different environments as stimuli and recorded the participants' ( $N = 40$ ) ratings of aesthetic, emotional, and behavioural preferences or responses to the images. Images included both built and natural environments, with or without aquatic features. The results indicated that both natural and built environments with water were preferred and were associated with more positive emotional ratings. While blue space may increase restorativeness of a

park, other social and environmental factors can act as constraints to both use and restoration.

In a qualitative study designed to investigate constraints to and benefits of park use, 25 elderly people in and around a city park in Hong Kong were interviewed (Hung & Crompton, 2006). Participants in Hung and Crompton's (2006) study were asked why they did or did not visit the park and what they liked and did not like about it. The most common constraints were poor health conditions, followed by being too busy and poor park management (e.g., the park was too busy, drug use, and prostitution was occurring within the park). Hung and Crompton identified that the most common benefits of park use were health-related, while other benefits were social and psychological, and these themes focused on the enjoyment of the various environmental features in the park and on social cohesion. Participants reported being happy to teach or help others in the park (e.g., teaching tai chi to others) and being able to feel less alone when in the park (p. 303). The majority of themes emerging from their study centred on psychological and social determinants of park use; however, other studies have focused more on the physical environment.

Korpela and colleagues (2008) investigated potential determinants of restorative experiences using a cross-sectional study design. They focused on a respondent's favourite environment and his or her experience of this environment. Self-reported favourite places could be green spaces or urban spaces, within 15 kilometers from their home, to ensure the level of measurement was around every day experiences, as opposed to vacation destinations ( $N = 1,089$ ; mailed questionnaire, 42.6% response rate). Results revealed three main findings. First, the immediate use of the favourite place was associated with restorative experiences. This included the duration and frequency of

exposure to the favourite place. Second, personal background of nature experiences, such as nature orientedness, nature hobbies, and childhood nature experiences, also influenced restorative experiences. Finally, situational factors in life related to stress, social relations, and social environment were associated with restorative experiences (Korpela et al., 2008). Increased stress and worries were positively correlated with increased restoration (Korpela et al., 2008). This may support the theoretical idea that there is a need for stress to be present first in order for restoration to occur. These categories of determinants accounted for 26% of the variance in restorative outcome scores, indicating that there are other factors, not tested in this model, that are also determinants of restoration (Korpela et al., 2008).

Using the same sample, Korpela and colleagues (2010) also examined the types of places respondents had described as their favourite. These included extensively managed nature areas, built-up green spaces, waterside environments, exercise and activity/hobby areas, and indoor and outdoor urban areas, indicating that favourite places were commonly variations of green space. Findings also showed that restorative experiences were strongest in the outdoor exercise and activity areas, waterside environments, and managed natural settings, suggesting that these natural environments are most conducive to restorative opportunities (Korpela et al., 2010). This data analysis furthered previous findings that favourite places are a determinant of restorative opportunities and that nature and natural features are predominant in these favourite places that contribute to restorative outcomes.

While these results indicated some of the types of environments that are restorative, a cross-sectional study by Ogunseitan (2005) considered more specific features of green spaces by asking about respondents' preferences of environments. Four



domains of preference in restorative environments were identified: (a) cognitive challenge, (b) synthetic tendency, (c) ecodiversity, and (d) familiarity (p. 145). These four domains contributed to a restorative environment, with ecodiversity and synthetic tendency (e.g., questions about the smells, sounds, lighting, and tactile stimuli) being the strongest for participants (p. 147). The ecodiversity domain identified a strong preference for bodies of water and presence of flowers as determinants of a restorative environment (Ogunseitan, 2005). The identification of these domains lent support to some aspects of attention restoration theory: for example, the idea that an environment needs to be extensive is similar to the dimension of cognitive challenge (Ogunseitan, 2005).

Overall, studies on determinants of restoration have identified that determinants can be contextual or related to the built environment. Studies have identified only some of the possible determinants, which are sure to fluctuate by person, place, and time. Qualitative studies are needed to gain information from park users on their perceptions of the determinants of restorative experiences in city parks, which may identify new areas for inquiry. Additionally, a focus on the theoretical perspectives of restoration in the literature will draw connections between findings of various studies discussed and help illuminate paths for future research.

### **Study Rationale**

Data reviewed from the studies on self-reported health and affect showed a consistent pattern of mental improvements after exposure to green space in experimental and cross-sectional studies (Bowler et al., 2010; Groenewegen et al., 2012; Johansson et al., 2011). However, this may be a cultural artefact owing to the fact that the majority of studies in the area have been done in North America and Scandinavia, where nature is

generally viewed positively. In addition, studies reviewed have generally focused on few outcome measures, and a qualitative approach would go beyond this by allowing participants to share their subjective experiences of mental restoration. This would help improve our understanding of mental restoration as a whole. Existing research on determinants of restoration have identified many factors within the built environment that can influence restoration, but has suggested that there are more to be uncovered. Thus, my research questions were (a) How do urban parks contribute to the mental restoration of park users in Lethbridge, and (b) How do park users experience the different features of an urban park, and what meanings do they attribute to them? In order to further explore these questions, a phenomenological approach was most appropriate.

Table 1.

*Self-Reported Health and Affect*

Authors	Study Type	Setting, Population	Method	Outcome(s)	Main Findings
Bowler, Buyung-Ali, Knight, & Pullin (2010)	Systematic review	Various	Systematic review of 25 studies	Varied positive effects of exposure to green space, often during a walk or run.	Evidence of positive effects of walk or run in outdoor environment compared to synthetic environment.
Huynh, Craig, Janssen & Pickett (2013)	Cross-sectional	Canadian youth age 11-16; (N = 17,249)	Linked data from survey to amount of green space around school.	<ul style="list-style-type: none"> <li>• Emotional well-being</li> </ul>	<ul style="list-style-type: none"> <li>• Weak positive association between amount of green space around school and well-being.</li> </ul>
Johansson, Hartig, & Staats (2011)	Experimental	Sweden: University students (N = 20)	Time (pre-, post-walk), type of environment (park, street), and social context (alone, with a friend) as within-subjects factors	<ul style="list-style-type: none"> <li>• Changes in self-reported affect (Exercise Induced Feeling Inventory; Negative Mood Scale)</li> <li>• Cognitive states (symbol substitution test)</li> </ul>	<ul style="list-style-type: none"> <li>• Walking increased positive affect and reduced negative affect.</li> <li>• Revitalisation increased during the park walks to a greater degree when alone, but increased more during the street walk when with a friend.</li> </ul>

*Table 1 continued*

Authors	Study Type	Setting, Population	Method	Outcome(s)	Main Findings
Groenewegen, van den Berg, Maas, Verheij, & de Vries (2012)	Mixed methods: cross-sectional & secondary analysis	The Netherlands: general pop.	National cross-sectional survey: $N = 12,700$ (64% response rate); neighbourhood cross-sectional survey: $N = 1,641$	<ul style="list-style-type: none"> <li>• National survey: Self-reported general and mental health.</li> <li>• Neighbourhood survey: Self-reported health and measures of stress, physical activity, and social cohesion.</li> </ul>	<ul style="list-style-type: none"> <li>• Link between levels of depression and green space.</li> <li>• Link between quality of streetscape greenery and self-reported health, with stress identified as a mediator.</li> </ul>
Wolsko & Lindberg (2013)	Cross-sectional	USA: college students ( $N = 265$ )	Survey: Nature Connectedness Scale; several measures of psychological well-being	<ul style="list-style-type: none"> <li>• Psychological well-being, including concepts of mindfulness.</li> </ul>	<ul style="list-style-type: none"> <li>• Correlation between nature connectedness and psychological well-being.</li> <li>• Link between connectedness to nature and appreciative outdoor activities.</li> </ul>

Table 2.

*Physiological Outcome Measures*

Authors	Study Type	Setting: Population	Method	Outcome(s)	Main Findings
Ulrich, Simons, Losito, Fiorito, Miles, & Zelson (1991)	RCT	USA: undergraduate students (N = 120)	Participants viewed a stressor video, followed by a recovery video of a natural setting or an urban setting.	<ul style="list-style-type: none"> <li>• Electrocardiogram</li> <li>• Pulse transit time, spontaneous skin conductance, frontalis muscle tension</li> <li>• Affect questionnaire (ZIPERS).</li> </ul>	<ul style="list-style-type: none"> <li>• Findings indicated that viewing a video of a natural environment enhanced recovery of both physiological measures and affect.</li> </ul>
Laumann, Gärling, & Stormark (2003)	RCT	Norway: students (N = 28)	Baseline EKG measurement, attention using task, exposure to a video of natural scenes or urban scenes, attention task.	<ul style="list-style-type: none"> <li>• Electrocardiogram</li> <li>• Performance on attention task.</li> </ul>	<ul style="list-style-type: none"> <li>• Lower heart rate during nature video compared to urban video.</li> <li>• Nature group may have less spatially selective attention.</li> </ul>
Hartig, Mang, & Evans (1991)	RCT	USA: students (N = 34)	1st session: Baseline measurement, cognitive fatigue task. 2nd session also included: walk in nature or indoor rest period, questionnaires, post-exposure physiological measurements, and attention task.	<ul style="list-style-type: none"> <li>• Affect questionnaire (ZIPERS)</li> <li>• Overall happiness questionnaire</li> <li>• BP, pulse, skin conductance.</li> </ul>	<ul style="list-style-type: none"> <li>• Greater restoration, as measured by physiological outcomes and self-reported affect, was found in the natural condition.</li> </ul>

*Table 2 continued*

Authors	Study Type	Setting: Population	Method	Outcome(s)	Main Findings
Hartig, Evans, Jamner, Davis, & Gärling (2003)	RCT	USA: students (N = 112)	Four experimental groups. Participants either performed a stress inducing task or not, spent time in a room with a view of natural scenery or no view, walked through natural or urban settings.	<ul style="list-style-type: none"> <li>• Blood pressure (BP)</li> <li>• Pre- and post-exposure affect questionnaire (ZIPERS)</li> <li>• Overall Happiness Scale</li> <li>• Necker Cube Pattern Control Task, Search and Memory Task (measures of attention).</li> </ul>	<ul style="list-style-type: none"> <li>• BP declined more sitting in a room with tree views compared to sitting in a room with no windows,</li> <li>• BP declined more walking in natural compared to urban surroundings.</li> <li>• Performance on attention tests improved at midpoint of walk in natural setting group compared to urban setting.</li> <li>• Affect improved in natural setting, declined in urban setting.</li> </ul>

Note: ZIPERS is Zuckerman (1977) Inventory of Personal Reaction.

Table 3.

*Physician-Measured Morbidity and Mortality*

Authors	Study Type	Setting: Population	Method	Outcome(s)	Main Findings
Takano, Nakamura, & Watanabe (2002)	Cohort study	Tokyo: elderly residents	Five-year mortality rates examined (98.9% follow-up); environmental factors were examined (e.g., walkable green streets and spaces near residence.	<ul style="list-style-type: none"> <li>• Mortality</li> </ul>	Tree lined streets near residence ( $p < 0.005$ ) and space for taking a stroll near residence ( $p < 0.001$ ) were both associated with increased probability of five-year survival.
Groenewegen, van den Berg, Maas, Verheij, & de Vries (2012)	Mixed Methods: cross-sectional	The Netherlands: general population	<ul style="list-style-type: none"> <li>• National cross-sectional survey (<math>N = 12,700</math> respondents, 64% response rate)</li> <li>• Neighbourhood cross-sectional survey (<math>N = 1,641</math> respondents)</li> </ul>	<ul style="list-style-type: none"> <li>• National survey: general and mental health.</li> <li>• Neighbourhood survey: health and measures of stress, physical activity &amp; social cohesion.</li> </ul>	<ul style="list-style-type: none"> <li>• Link between morbidity of depression and green space.</li> <li>• Link between quality of streetscape greenery and self-reported health, with stress identified as a mediator.</li> </ul>
Maas et al. (2009)	Cross-sectional	The Netherlands: general population, ( $N = 345,143$ )	<ul style="list-style-type: none"> <li>• Morbidity data from electronic medical records</li> <li>• Green space around home based on existing database.</li> </ul>	<ul style="list-style-type: none"> <li>• Morbidity of 24 disease clusters</li> </ul>	<ul style="list-style-type: none"> <li>• Prevalence of 15 disease clusters lower in areas with more green space.</li> <li>• Strongest for depression and anxiety disorders.</li> <li>• Strongest for children under 12.</li> </ul>
Villeneuve et al. (2012)	Cohort study	Canada: general population ( $N =$ approx. 575,000)	Data from income filings and Canadian Mortality Database; green space identified by satellite	<ul style="list-style-type: none"> <li>• Mortality</li> </ul>	<ul style="list-style-type: none"> <li>• Reduced non-accidental mortality correlated with increased green space.</li> <li>• Strongest for respiratory disease-related deaths.</li> </ul>

Table 4.

*Physical Activity, Mental Health, and Green Space*

Authors	Study Type	Setting: Population	Method	Outcome(s)	Main Findings
Coon, Boddy, Stein, Whear, Barton, & Depledge (2011)	Systematic Review	Varied	Systematic review of online data bases (11 studies included)	Comparative effects of indoor and outdoor physical activity—varying outcome measures.	Some evidence that outdoor physical activity has greater benefits to mental well-being than indoor physical activity.
41 Annerstedt, Östergren, Björk, Grahn, Skärbäck, & Whärborg (2012)	Cohort study	Sweden: rural, suburban and small towns ( $N = 9,230$ )	Data extracted from longitudinal population health survey; green space data from landscape assessments.	Mental and general health survey	Overall, results indicated that mental health was not affected by green space, but a significant interaction effect for physical activity and green space found for women.
Richardson, Pearce, Mitchell, & Kingham (2013)	Cross-sectional	New Zealand: general population ( $N = 8,157$ )	Green space data measured using a combination of three land-use datasets; individual health data acquired from national health survey.	Overweight, poor general health, poor mental health, cardiovascular disease.	Neighbourhood green space associated with reduced risk of poor mental health ( $OR = 0.81$ , 95%, $CI = 0.66–1.00$ ); a dose-response relationship was observed. It was also associated with increased physical activity ( $OR = 1.44$ , 95%, $CI = 1.19–1.74$ )
Mitchell (2013)	Cross-sectional	UK: general population ( $N = 1,890$ )	Data extracted from 2008 Scottish Health Survey.	Mental health and mental well-being.	Association between regular use of natural environments and lower risk of poor mental health.

*Table 4 continued*



Authors	Study Type	Setting: Population	Method	Outcome(s)	Main Findings
Fan, Das, & Chen (2011)	Cross-sectional	USA: general population (N = 1,544, 43.2% response rate)	Health data from existing community health survey used three measures of neighbourhood green space.	Stress, social support, physical activity.	Park green spaces found to mitigate stress by increasing social support. Overall neighbourhood vegetation mitigated stress.

Table 5.

*Determinants of Restorative Experiences*

Authors	Study Type	Setting: Population	Method	Outcome(s)	Main Findings
Korpela, Ylén, Tyrväinen, & Silvennoinen (2010)	Cross-sectional	Sweden: general population ( $N = 1,089$ , 42.6% response rate)	Respondents were questioned about favourite places within 15 km of their home, perceived health, and use of favourite places.	Use of favourite places and restoration outcome scale score.	Association between need for restoration, use of favourite place, and restoration.
Völker & Kistemann (2011)	Systematic review	Various: mostly student	Qualitative meta-analysis of 36 articles.	Various	Beneficial effects of blue space were categorized into five categories: perception and preference, landscape design, emotional benefits, restoration and recreation benefits, and direct health benefits.
White, Smith, Humphryes, Pahl, Snelling, Depledge (2010)	Experimental	UK: university community. ( $N = 40$ )	Exposure to photos of different environments, responded to questionnaire.	Preference, affect, willingness to pay for the view, perceived restorativeness.	Presence of blue space associated with increased preference, positive affect, and perceived restorativeness.

*Table 5 continued*

Authors	Study Type	Setting: Population	Method	Outcome(s)	Main Findings
Hung & Crompton (2006)	Qualitative	Hong Kong: elderly, ( <i>N</i> = 25)	Interviews	Examined constraints to park use and benefits of park use as reported by participants during interviews.	Constraints to park use: poor health, too busy, poor park management, illicit behaviour in park.  Benefits from park use: health, social and psychological benefits.
Korpela, Ylén, Tyrväinen, & Silvennoinen (2008)	Cross-sectional	Finland: general population, ( <i>N</i> = 1,089, 42.6% response rate)	Surveys about determinants of restoration in favourite places and a restoration outcome scale	Restoration outcome scale (ROS) – 6-item scale with computed summary score.	The strongest determinant positively related to restorative experiences was the length of stay in the favourite place, followed by nature orientedness and frequency of visiting the favourite place. These three variables accounted for 18% of the variance in ROS scores.
Ogunseitan (2005)	Cross-sectional	USA: students, ( <i>N</i> = 379)	Surveys: WHO Quality of Life (QOL) instrument and questionnaire on topophilia	Factor analysis identified four domains of topophilia and four of QOL. Structural Equation Modeling identified a model linking topophilia and QOL ( $\chi^2 = 5.02$ , $p = 0.414$ ).	Overall QOL score was significantly associated with high rating of topophilia. Environments with ecodiversity were more highly associated with restoration than environments associated with cognitive challenge.

## Chapter 3: Methodology

### Research Approach

Phenomenology is an approach for discovering the essence of a phenomenon that is experienced by multiple people (Moustakas, 1994). Edmond Husserl (1911/2006), known as the founder of phenomenology, was interested in how people consciously experience the phenomena associated with social life. Phenomenology, therefore, aims to describe how a person experiences the world around them, how they experience a particular phenomenon, and focuses on participants' lived experiences (Liamputtong, 2013). This experience is grounded in the social context and perceived reality of the individual. The phenomenon is consciously experienced by the person, and the researcher must strive to understand how an experience is given meaning in order to develop an understanding of the essence of the phenomenon at hand (Flood, 2010). This approach, therefore, fit well with the topic of study, which was an individual experience of mental restoration in green spaces. It was assumed that the experience has a central essence that is shared by other people who have experienced this same phenomena (Marshall & Rossman, 2011). I explored this central essence of mental restoration in green spaces through use of transcendental phenomenology.

**Transcendental phenomenology as philosophy.** To begin discussing phenomenology, one must discuss philosophy. Phenomenology is a philosophy that is not opposed to a traditional empirical position, but rather occupies the space where a traditional empirical position is insufficient. It shares this space with other human science research models, such as grounded theory, ethnography, and hermeneutics; however, transcendental phenomenology differs from these other research approaches in aspects of both philosophy and methodology (Moustakas, 1994). A distinguishing feature is the use of bracketing to strive to be open to a subjective

account of an experience. Also prominent in transcendental phenomenology are the foci on the essence of the experience and on the structures and factors that influence the experience (Moustakas, 1994). These are revealed through analysis of experiences across participants.

In exploring phenomena that cannot be observed or measured, such as emotional or otherwise internal experiences, phenomenology can provide a logic that contributes to ensuring rigor in qualitative research (Giorgi, 2009). This rigorous approach is used to understand the true meaning, or essence, of experiences. Phenomenology examines the experience of an individual as it is experienced in his or her life world and views experiences as things that while they may not exist in space and time, nevertheless truly exist in the consciousness of an individual (Giorgi, 2009). There is a relationship between the subjective consciousness of something and of the object itself. Exploring this relationship helps to understand the meaning attributed to this object, or experience, and derive true meaning (Moustakas, 1994). Phenomenology offers a methodology that guides this process.

**Transcendental phenomenology as methodology.** In addition to guiding a philosophical stance, phenomenology is also a methodology. I used transcendental phenomenology as described by Moustakas (1994). Moustakas's approach has been suggested for novice researchers because of its structured procedure (Creswell, 2013). As a methodology, transcendental phenomenology aims to capture the essence of a phenomenon by examining people's experience of it, then distilling these experiences down to what is common between them (Moustakas, 1994).

As the researcher, I attempted to view mental restoration in green spaces as though I were seeing it for the first time, to allow the focus to lie on the participant's experience, with minimal interference from outside influences and from my biases (Moustakas, 1994, p. 85). I then

attempted to understand how meaning was attached to each experience and how the experience might be broader and/or deeper than originally thought (Flood, 2010). The use of bracketing allowed me to better explore subjective experiences.

**Bracketing.** Husserl (1911/2006) believed that researchers should strive towards objectivity through use of bracketing the researcher's own experiences, history, and presuppositions. Bracketing refers to the researcher's examination of their own beliefs and experiences related to the phenomenon of study and then the removal, or setting aside, of these beliefs (Lowes & Prowse, 2001). By doing this, I sought to suspend my judgements about reality and about the experiences of green spaces, in order to allow myself to perceive a participant's experience without bias (Creswell, 2013). It is generally acknowledged that a complete suspension of your own beliefs is not attainable. Therefore, many opinions on bracketing and, in fact, many different types of bracketing have been developed (Gearing, 2004). Creswell (2013) suggested that the researcher define how he or she will manage his or her personal understandings in relation to the research project.

In this study, I engaged in reflexive bracketing to examine my own suppositions about the phenomenon of study and attempted to prevent them from influencing my interaction with participants and my understanding of their experiences. Reflexive bracketing rests on an ontological assumption of relativism. The main goal is for the researcher to identify his or her personal values, biases, and suppositions in relation to the research topic and to acknowledge and make them transparent (Gearing, 2004). By explicitly acknowledging them, I was able to be more aware of how my thoughts might interact with those of the participant. My aim was not to set aside and ignore these past experiences with the phenomenon. In fact, a phenomenological

inquiry often incorporates a researcher's personal link to the phenomenon, which can allow for enhanced co-creation of data with the research participants (Moustakas, 1994).

Bracketing only occurred internally as I acknowledged and bracketed my personal assumptions. It did not occur externally—that is to say, the phenomenon of interest was not separated from the social and physical environment in which it occurred. These are important factors in developing an understanding of how mental restoration is experienced after spending time in green and blue spaces. Additionally, a participant's individual background and cultural background may have influenced their experience of mental restoration. In particular, childhood experiences with nature have been shown to influence an adult's experience of mental restoration in a natural setting (Korpela et al., 2008). Therefore, all external factors must be allowed to influence and be part of the research data. The procedure followed helped to allow for this.

### **Procedure**

I followed Moustakas's (1994) five main steps to phenomenology. The first step is to determine whether the research question can be investigated using phenomenology, and the second is to identify a phenomenon for study. The phenomenon under study was the experience of mental restoration as a product of spending time in urban green and blue spaces. The third step is for the researcher to bracket their own experiences. This has been done using the described reflexive bracketing, with results as described in the next section (Gearing, 2004). The fourth step is data collection, which occurred through in-depth interviews (Moustakas, 1994). Data were analyzed using thematic analysis, and textural and structural descriptions of the phenomenon were developed. Finally, a written description was composed of the essential structure of how green and blue space in city parks influence mental restoration. Data were

collected from a group of participants selected because they were best able to create data relevant to the research questions.

**Reflexive statement.** While bracketing occurred as an ongoing process throughout the larger research process, I initially delved into my own experiences with mental restoration in green spaces before data collection began. My goal in this process was to examine my suppositions, biases, and subjective experiences. This process of *epoché*, as described by Husserl (1913/1931), allows the researcher freedom from the biases encountered in everyday thought and freedom to view a phenomenon as it is, at face value, without passing judgement on its spatiotemporal existence (p. 111).

I examined my past knowledge of mental restoration in green spaces and found that it is an experience I have had throughout my life. Living in a Western society has influenced me by encouraging me to think that being outdoors is good for people—and this holds true in my personal experience. Being in an urban green space has been a highlight of my commute or of my day; it is a bonus experienced in my day, as I move through the physical spaces that make up my daily environment. I also acknowledged that I have had frightening experiences in urban parks, particularly while passing through them alone and in the dark. Thus, I realized that the environment did not always affect me the same way, and I could not expect to know how it affects others, or how others, including study participants, experience mental restoration.

**Sample.** Participants were sought who have experienced mental restoration after spending time in green and/or blue space situated in an urban park in Lethbridge, Alberta. In phenomenology, the sample must be composed of a group of individuals who have all experienced the same phenomenon (Creswell, 2013). Therefore, a purposeful sampling strategy was most appropriate (Marshall & Rossman, 2011). Because the experience of mental health



benefits can be subjective, potential participants were asked to self-identify whether they experience mental health benefits while using an urban park (Liamputtong, 2013). The main goal was not to have a large sample size that produced generalizable results, but rather to obtain in-depth information from participants (Creswell, 2013). Fifteen participants were interviewed in this study. In order to select sufficient participants as described, a recruitment strategy was used.

**Sample recruitment.** To facilitate the sampling of a population that has experienced a common phenomenon, participants were recruited from city-owned green and blue spaces in Lethbridge. Specifically, recruitment focused on Nicolas Sheran and Henderson Parks because they exhibit a variety of park features. It was anticipated that users of these parks might be better able to comment on features of the built environment that contribute to mental restoration. Posters (see Appendix A) were distributed in the park setting to seek participants. It was desirable that all participants have experienced the phenomenon at hand and that they were aware of it. Therefore, the main inclusion criterion was that participants have experienced mental restoration during and/or after spending time in an urban green space in Lethbridge.

The poster directed people to contact me by email if they are interested in participating, and I administered a screen by email or by phone (see Appendix B). I was also contacted by some participants after I was interviewed for an article in the local newspaper and by a local news agency regarding this study (see Appendix C). Those who were interested in the study were asked by email or by phone to self-identify whether they believed they benefitted psychologically from spending time in parks. The screen included a plain language description of mental restoration based on the research literature. Additionally, I asked participants if they have had this experience in a city park. If participants reported mental restoration both in city

parks and other wilderness areas (e.g., national parks), they were invited to participate, but were asked to focus on their experience in city parks for the interview. An interview was then scheduled, at which point data collection occurred.

**Data collection.** Data were collected using in-depth, face-to-face interviews. An in-depth interview seeks to capture the participant's own perspective and to share it with the researcher (Liamputtong, 2013). In phenomenology, data are co-created by the participant and the researcher. Rather than the researcher just observing as the participant describes something, it is important that there is clarification, probing, and reflection on the part of both participant and researcher (Flood, 2010). This allows the researcher to see the described phenomenon from the participant's unique perspective and gain a deeper understanding of how they have experienced and been affected by the phenomenon. An in-depth interview can be seen as a conversation between researcher and participant, where the creation of data stems from an understanding of the participant's experiences, not merely the direct answers to interview questions.

Interviews were conducted in agreed-upon public locations (e.g., library, coffee shop) and were audio-recorded with participant's consent. Before beginning the interview, all participants read the consent form (see Appendix D) and had the opportunity to ask any questions or to withdraw. They were informed that they could withdraw at any time during the interview. The interviews averaged 42 minutes; the shortest was 23 minutes, and the longest was 76 minutes. Following the procedure outlined by Moustakas (1994), an interview guide was prepared to help the interview process (see Appendix E). The guide sought to answer the two research questions, which were (a) How do urban parks contribute to the mental restoration of park users in Lethbridge, and (b) How do park users experience the different features of an urban

park, and what meanings do they attribute to them? Using the questions in the interview guide, data were gathered to write textural descriptions (e.g., what happened) and structural descriptions (e.g., how it happened) during the data analysis (Moustakas, 1994).

**Data analysis.** I first transcribed and organized the data. As suggested by Creswell (2013), the use of memos while reading the data served as an initial process of exploring the data, allowing me to develop a better knowledge of the transcripts. Thematic analysis was used to analyse interview data and field notes. This type of analysis aims to find shared meaning or patterns of meaning across participants in a study (Liamputtong, 2013). Multiple stages of coding, following Moustakas' (1994) method, were also used to analyse the dataset as a whole and identify themes across participants.

This tied in well with the goals of Moustakas's (1994) phenomenology to create a textural and structural description of the phenomenon. After identifying significant themes from the data source, I wrote a textural description of what each participant experienced and a structural description of how the context and setting influenced their experience (Creswell, 2013). This focused on how the built environment and its various features influenced mental restoration in the participants' experiences. It also considered the social environment influencing the participants. Themes, as well as these written descriptions, were then analyzed across participants to create a final written passage consisting of the essence of the phenomenon of study. Because the creation of these descriptions stems from data collected from human participants and their experiences, ethical considerations have been paramount at all stages of research.

## **Ethical Considerations**

Ethics approval was obtained from the Human Subject Research Committee at the University of Lethbridge. *The Tri-Council Policy Statement: Ethical Conduct for Research Involving Humans* (Canadian Institutes of Health Research, Natural Sciences and Engineering Research Council of Canada, and Social Sciences and Humanities Research Council of Canada [Tri-Council], 2010) was adhered to and used to guide research activities. In regards to qualitative research particularly, the Tri-Council (2010) has acknowledged that flexibility is required, as changes to research and interview questions can often arise during the course of data collection. The Tri-Council has suggested an on-going reflexivity and responsiveness to change by the researcher to help ensure the overall strength and rigour of data collection and analysis in a qualitative study.

The Tri-Council (2010) guidelines were followed in regards to voluntary, informed, and ongoing consent of the research participants. Informed consent procedures begin before data collection begins and are considered an ongoing agreement between researcher and participant (see Appendix D), which can be subject to change. Participants were informed that they could withdraw consent at any time. Guidelines on confidentiality and privacy were also adhered to: in particular, the safeguarding of information that may serve to identify participants. Only I heard the audio recordings. Any names and identifying comments on the audio recording were omitted during transcription. These ethical considerations were important for safeguarding participant identity, while allowing for dissemination of research findings, which will be presented in Chapter 4.

## **Chapter 4: Results**

This qualitative research examined experiences of mental restoration during and after exposure to urban green space. The phenomenological methodology allowed for in-depth interviews with study participants to address the individual experience of mental restoration. The results are organized into four main themes and subthemes, drawn from the data produced by interviews with study participants.

### **Sample Demographics**

This study consisted of 15 participants: 8 female and 7 male. The average age group of participants was 46-55 years old, which was slightly older than the average age of Lethbridge residents, which was 38 years old in 2013 (City of Lethbridge, 2013). The age range was 23 to 88 years of age. On average, participants had lived in Lethbridge for 31 years, in Alberta for 37 years, and in Canada for 45 years. Participants had lived in both Lethbridge and Canada for as little as one year or as many as 88 years. Four main themes, each with subthemes, emerged from their input (see Table 6).

Table 7 shows the number of participants who cited each subtheme in their interview. Subthemes were included when they were cited by a majority of participants, or when they were cited more frequently than other subthemes within the same overarching theme. Themes were excluded when they did not relate directly to the research questions, and thus were judged to be outside the scope of the project. They were also excluded when the same concepts were also captured within other subthemes, or when they were cited by a 3 participants or fewer. For example, many participants made significant statements that related generally to health, however these ideas were often subsequently described in more detail by the participant, and thus captured under more precise subthemes.

Table 6.

*Themes as cited by participants*

Theme	Number of Participants
Sensory engagement	14
Viewing wildlife	12
Brief encounters	5
Quality time with family and friends	12
Observing others	7
Inclusivity	6
Using my body	9
Connecting to myself	11
Historical connection	4
Thought and emotion patterns	15
Park features	14
Accessibility and Safety	8
Free	5
Determinants of park visit (not included)	11
General statements about health (not included)	8
Spirituality (not included)	3

To protect the identity of participants, each was assigned a letter to act as a pseudonym. Data from these participants were analysed to create individual descriptions of their experience, as seen in the example in Appendix F. Data from all participants were analyzed and organized

into the resulting themes and subthemes. As outlined in Table 7, the main themes were connections to nature, connections to community, connections to self, and park features.

Table 7.

*Themes and Subthemes as Identified by Participants*

Theme	Subthemes
Connections to Nature	<ul style="list-style-type: none"> <li>• Various sensations create a connection with nature.</li> <li>• Viewing wildlife encourages people to live in the moment.</li> </ul>
Connections to Community	<ul style="list-style-type: none"> <li>• Brief encounters with others are important.</li> <li>• Spending time with friends and family in parks is valued.</li> <li>• Observing others in parks creates feeling of connection.</li> <li>• Inclusivity is important for park users.</li> </ul>
Connections to Self	<ul style="list-style-type: none"> <li>• Physical activity leads to emotional wellbeing.</li> <li>• Parks are a place to re-connect with yourself, go back to your roots.</li> <li>• Parks are links to history.</li> <li>• Parks can encourage change in patterns of thoughts and emotions.</li> </ul>
Park Environment	<ul style="list-style-type: none"> <li>• Park features influence mental restoration in parks.</li> <li>• Accessibility and safety are important determinants of park use.</li> <li>• Free use of parks</li> </ul>

### **Connections to Nature**

Feeling a connection to nature was an important part of the park visit experience for almost all participants. The urban park was viewed as an easy way to get access to nature and incorporate it into daily life. Nature was experienced through two main avenues: (a) engagement of the senses and (b) viewing wildlife. As reflected by this participant’s comment:

*There’s just something more appealing about being in an environment that is closer to nature. (R)*

**Engaging the senses.** Elements of nature were experienced by participants through sight, touch, smell, and sound. These sensations especially stood out in contrast to the sensations

felt during daily life, which was often indoors, and lacked variation in the way the senses were stimulated. Feeling wind, sun, and rain was described as a positive experience the majority of the time, although cold and wind were sometimes deterrents to going outside, as reflected in these comments:

*Nothing can beat being outside, getting the sun on your skin, getting the elements there, getting beaten up by the wind. (A)*

*So you see trees, you see grasslands, you see water space, you see even the sculptures, the metal sculptures, so there's a lot of textures that you see, pebbles. There is just so much to, what do you call it, sensitize, as in make you sensitive; You become sensitive to a lot of textures. You just begin to think about forms, about colours. (S)*

Another aspect of the environment frequently mentioned was the topography of the ground. Some participants commented that they liked to walk on the grass or on dirt trails rather than paved paths because it was more natural, because it was different than the flat surfaces where they usually walked, and because it was more challenging and interesting, both physically and mentally. The sensation of walking up and downhill also contributed to feeling connected to nature for some participants.

These different elements, as well as changes that occurred in the park during different times of day and different times of the year, lent interest to the park. These various perceptions heightened the experience and the sense of being connected to nature. Experiencing the changing seasons was described by several participants as something to look forward to and something that made them feel “in tune” with nature.

**Viewing wildlife.** A prominent aspect of connecting with nature involved observing or interacting with wildlife in urban parks. Seeing an animal while walking through a park was considered to be special, made the walk better, or was something worth telling another person.



Seeing wildlife evoked a “childlike sense of wonder,” as one participant described the feeling of seeing deer and being compelled to stop and watch them.

For some participants, seeing wildlife also created an awareness of their surroundings that they did not always experience. This was described as being awake to the things around them, and although it was sometimes brought on by a need to be aware of potentially dangerous animals (e.g., rattlesnakes, coyotes), it was a positive experience. Seeing wildlife was also described as an experience that made participants feel “in the moment” and focused on the experience of seeing the animal as it happened, as described in this participant’s comment:

*To spot a white tailed deer is really pretty and just kind of makes you stop for that moment and just reflect. (H)*

Connecting with nature by viewing wildlife was described by some participants as something that happened while they were out for other reasons, and it added to the experience. For others, observing wildlife was the main purpose of their visit to parks, whether they were birding, taking photographs, or trying to catch a glimpse of an animal they had heard was in the area. Thus, connecting with nature through wildlife viewing could be deliberate or unplanned. In addition to feeling a connection with nature while in the park, participants described a feeling of connection with the community.

### **Connections with Community**

Participants described many ways in which being in parks made them feel connected to their community. This could be on a small level, such as bonding with a friend while walking, or on a larger level, such as feeling like a part of a greater group of “outdoors people.” These various types of connections were experienced through direct interaction with others as well as indirectly through observing others in the park. Several participants who spent time in parks walking their dog described this time as bonding or quality time with their dog. Connections with

community was experienced through four main avenues: (a) brief encounters, (c) time with friends and family, (d) observing others, and (e) inclusivity.

**Brief encounters.** Dogs were also seen as catalysts to interacting with other people, both by dog-walkers and those without dogs, as reflected in this participant's comment:

*If you get two people who are walking their dogs, quite often those two people will stop, and they'll just chat, maybe just for a couple of minutes, but there's that connection, whereas in other parts of the city or other parts of your daily lives you don't necessarily make any, even eye contact, with other people. (R)*

Brief interactions with other people, brought together by a dog or otherwise, were described by a majority of participants. These brief interactions often entailed just saying "hi" as they passed another person, but contributed towards making the park feel like a friendly environment. One participant commented that these brief interactions were still important; sometimes, they were the only interaction he/she had with other people all day.

Sometimes, these brief encounters led to a sustained relationship. While most participants did not report meeting new friends in parks, there were two ways in which they did meet people and form lasting bonds. Some people who had been going to the same park for years became acquaintances with people after repeatedly seeing them in the park. This was also a way for some people to meet their neighbours. Others formed relationships with other park users based on a shared activity, such as birding or photography. For example, one participant described how she/he and another person were watching the same birds in a park, began talking, and became "birding buddies."

**Time with friends and family.** Parks were described by many participants as a place they went with family and friends, either as a destination for a group gathering or to meet up with a friend for a run or a walk. For example, parks were described as a good place for a large family gathering with people of different ages because a variety of activities could be done in the

park (e.g., Frisbee, soccer, BBQ-ing, etc.). Participants voiced that a park is also a good place because it is a casual and laid-back atmosphere and because it is a friendly environment for people.

Several participants described their time in a park with another person (e.g., friend, spouse, etc.) as quality time together or time without other distractions. This time could be used to talk about problems or to talk about dreams, as reflected by these participant comments:

*It's a good place to bring people together. I think there's something bonding about going to a park, and the experience, for sure. (K)*

*It's a nice time to be sociable and catch up on what's been going on and things. . . . It's sharing things, and it's bouncing ideas off of each other. So [there are] benefits of friendship as well; it's nice to go with a friend. (A)*

**Observing others.** Connection to community was felt by many participants as a result of unobtrusively observing other people in a park. Seeing others enjoying themselves or relaxing was described by some participants as a feeling that “rubs off” on you, as reflected by this comment:

*You know, one time I walked through there, and it was actually winter, and there was a dad, and he was out with his two kids, and he was chasing them all around, and they were just giggling. It didn't matter where I was in the park, I could hear these kids giggling, and how can you feel bad about anything when you've got these kids giggling their heads off? (C)*

Some participants also described watching other people in the park as something that was interesting or distracting. When observing others, participants described responding to the emotions of others, such as the happiness of children playing, or being interested in the types of activities other people were doing in the park. This was a way to see how other people used the park in different ways, and this in itself was a pleasurable activity. For example, two participants described watching other people fishing in some of the urban parks that have stocked ponds. This was an activity that was somewhat foreign to them, and so they derived pleasure and

interest from watching others fish. Observing others was also described as a way to distract oneself from troubling thoughts, as reflected in this participant's comment:

*It's fun because it also gives you a chance to observe people, and they don't really notice you, but you get to watch them do things. That is very distracting if you have got so much on your mind and very good too. (S)*

**Inclusivity.** Many participants expressed that parks are seen as spaces for everyone in their community. They often derived enjoyment from meeting or observing people they otherwise would not cross paths with. Seeing diverse people and people doing different activities was seen as something that enriched their visits to the park. Some participants noted that certain parks are frequented by a certain "crowd" or a certain group of people, but this generally did not affect whether they frequented the park or not. The theme of inclusivity linked strongly with the theme of accessible park features, which is discussed under the main theme of park environment.

Inclusivity was also described in the sense of a group identity common to all park users. Some participants said that they felt an affinity for others in the park because of their shared use of the space. One participant described this as being around "like-minded" people, while other comments included:

*There's a shared feeling in the community of the love of the park. (S)*

*There's a bit more acquaintance attachment in their voice: I recognize you, you're not a threat, you're not out to hurt me, you're just out walking, and you're out walking for the sake of walking, so there's this tiny little flicker of a community spirit. (I)*

### **Connections with Self**

There were many ways in which participants described connections to themselves, including: physical connections to self, emotional connections to self, historical connections to self, and connections to thoughts and emotions. Some participants also described the time they

spend in parks as “my time,” indicating that they are focused on themselves rather than focusing on socializing or on doing something for the benefits of others. Some participants also said that for certain types of park visits, where they focused on themselves, on meditation, or on clearing their thoughts, they preferred to be alone. Connections with self were experienced through four main avenues: (a) using my body, (b) connecting with a part of myself, (c) parks are links to history, and (d) thoughts and emotions.

**Using my body.** Several participants described the physical connection they feel to themselves when they are walking, running, or moving in or through a park. Many participants acknowledged the physiological benefits of physical activity (e.g., cardiovascular benefits, weight loss, etc.), but moving their body was also described as being important far more than physical health. In this sense, physical and mental health were described by many participants as being strongly linked or as being the same thing. Many participants focused more on emotional or psychological benefits derived from being in a park and from moving their bodies. Some described a sense of satisfaction derived from moving their body or challenging their body. These benefits were described as coming from types of physical activity as diverse as leisurely walking or training for an ultra-marathon. Participant comments included:

*I think that our mental health is not just in our brain, I think it's in our hands, it's in our feet, it's in our whole body. (V)*

*I contribute all of my coping ways, for stress and anxiety and depression or whatever, based on what I can do physically to get outside and to work my body and eat healthy. (H)*

*You can either ignore your problems through walking, or you can embrace your problems through walking. (I)*

**Connecting with a part of myself.** Connections to oneself were also experienced in terms of mental or emotional connections. These experiences were described by participants as

re-connecting with themselves, getting back to their roots, and getting in touch with humanity.

Participants also described being able to understand their own place in the world. Several participants described this as a positive, humbling experience, as reflected in this comment:

*I can just go out there, have those experiences, and just know that things are ok. That my problems aren't that big, in reality, and in the global kind of concept, I guess, I'm pretty small and insignificant, and it's humbling. That's how I take it anyways. It's just humbling to know that this world is so big and expansive, and I'm just this little thing, and my problems aren't that big and significant at all. (T)*

Connection to self can also be linked to the theme of connection to nature. One participant described how being in a park made him/her feel connected to nature and that the same feeling included a feeling of connection to a part of him/herself not often experienced. When asked why these connections were important, the participant replied, "I just think it's the essence of what makes us human. Before we finally become robots, this is an important part of our humanity." Another participant added to this concept by stating,

*I think there's something very innately human about that sort of awareness. That's important. That's integral to who we are, and we don't get to use those instincts all the time. It adds to it. If there is a coyote, you're like, "It's probably fine, but I'm going to keep an eye out." That's a whole other—that's connecting with a part of myself that I don't get to experience a lot. (H)*

**Parks are links to history.** Connection to history was experienced in two ways: (a) connection to the history of a space and (b) connection to personal history. One participant described how areas in a park and sightlines without manmade structures in them made him/her consider how the land would have looked in the past and to feel a link with people who had lived on this land in generations past. Other participants described how fixed park features made them think back to their childhoods spent in the same park, thus providing a connection to their own history, as highlighted in this participant's comment:

*Well, the thing I like about Henderson is the old trees—the mature trees and the fact that I've seen them for so many years. You almost feel like you're friends, that type of feeling.*

*I find that it's almost like being in a room full of friends when I'm walking there, because of the old trees. (V)*

**Thoughts and emotions.** Another way in which participants connected with themselves was through changes in thought patterns during their park experience. Many participants described how park environments made it easier for them to slow down their thoughts, organize their thoughts, or direct their thoughts towards something that they consciously decided they wanted to think about. Many people found that in a park environment, it was easier for them to clear their thoughts than in other environments. Sometimes, this created a mental space for them into which other thoughts could move—thoughts that they otherwise did not get the time or space to consider throughout the course of daily life. Three participants directly referred to this as a meditation, such as in this participant's comment:

*So sometimes, I can't think straight. I can't put my thoughts together, so I just leave everything and just go to the park, and just relax and sit there, and distract my mind. Look at the birds, look at the water, and afterwards. I become more relaxed, and I think, when I get back, it's like I've taken a rest, like sleep, and then it's like my brain is starting afresh, like I'm rebooting to start over again. (S)*

Several participants contrasted their thoughts in a park to thoughts they had during other parts of their life by saying that normally, their thoughts were attracted by the various stimuli in their environment; cell phones, computers, and advertisements were frequently cited stimuli. In contrast, these stimuli did not exist or were less in the park, as suggested by this participant's comment:

*Maybe it's a time for me to think about the things that I want to think about as opposed to thinking about the things that I feel I should think about . . . I am sort of choosing, "Ok I'm going to leave all this stuff behind while I'm doing my park walk." Then, I'm just going to think about the things that I want to think about. Think about the slideshow because I enjoy doing that kind of thing. I'm going to think about what kind of things I'm seeing, because I like to see those sorts of things, and I'm not going to let the other stuff intrude. (C)*

Another emotion frequently cited was that of freedom. Freedom was described as freedom from physical spaces, such as the home or office, and freedom from the demands of daily life, such as from the computer or from the demands of the people in participant's lives. This was linked to the idea of self-care and of taking "me time." One participant described her/his time in the park as a reprieve from demands of being a care-giver at home, and stated,

*So, it is a bit of an escape. That sounds awful, I know, but I'm away from that for an hour or an hour and a half, and I'm free to just enjoy the quiet. (J)*

### **Park Environment**

The park environment was discussed by many participants as playing an important role in their experience in the park. Environmental features can act as contributing factors towards mental restoration. A main aspect of the park environment, the opportunity to connect to nature, was already discussed. Park environment was experienced through three main avenues, which included (a) park features, (b) accessibility and (c) safety.

**Park features.** Many participants discussed how some park design elements made them feel like they were in another world—away from the day-to-day. Trees or hills that blocked sightlines to busy roads and buildings helped to create this boundary. Space between roads and park paths helped participants to relax and feel removed from daily life, while contributing to a feeling of safety because of increased distance from road traffic. This physical space created by park features was linked by some participants to the feeling of clearing thoughts, as discussed in a previous section, and as reflected in this participant's comment:

*So, I don't know what it is about trees, but it's just like that feeling of being surrounded. You can't really see what's around the next turn; it's just more, I don't know, an intimate experience. (G)*

Many participants enjoyed being near the water; it was linked with feelings of calm and tranquility. It was also appreciated because of the sounds, smells, and wildlife that accompany



the water's edge. Water features also contribute to diversity in parks, which was another common theme. Diversity was an important factor, both between and within parks. Between parks, diversity allowed park users to choose a park that best suited their needs for that trip. For example, one participant would visit less busy parks when she/he wanted to walk alone, but would visit parks with playgrounds when going out with her/his children. The availability of a quiet park made it easier for the participant to get in "me time" walks and focus on his/her own health. Within parks, diversity allowed for choice in what to do or where to go in the park. For example, various types of trails allowed park users to walk different routes each visit. Diversity was also described as changes in the park over time—in different times of day or different times of the year. These changes were often described as exciting or something to look forward to in the park, as reflected in this participant's comment:

*All the parks are somewhat different in their character, and you can get different things from those parks. (R)*

**Accessibility and safety.** Many participants spoke about the importance of physical accessibility through availability of parking lots, paved paths, maintenance, benches, signage, and washrooms. Often, participants said they did not need these accommodations themselves, but it was important for all people to have access to the city parks. The importance of maintaining pathways, especially in the winter months, was raised by several participants. This pathway maintenance was important for allowing them, or encouraging them, to get outdoors during the winter months. Park information and signage was thought to be particularly important in encouraging newcomers to Lethbridge to discover the urban parks.

Safety in parks was linked to accessibility. Some participants felt that certain aspects of the parks prevented them from feeling safe and sometimes prevented them from using the parks. The main deterrents from park use were slippery paths in the winter; lack of lighting after dark,

which caused footing to be treacherous; and garbage in the parks, which was a deterrent to going there with a dog that may eat something dangerous. Even when still using parks, having to look out for these obstacles was described as something that made time in the park less enjoyable and less conducive to mental restoration, as reflected in this comment:

*My dog will just try and eat everything, so half the time when I'm walking him, I'm trying to get him to stop eating all these random things. (G)*

**Free.** Many emphasized the importance of parks being free for all people. This was cited as beneficial because cost would be a large deterrent for going. The lack of cost also helped to facilitate social gatherings because it made the gathering more accessible to the whole group. For example, meeting up to play disc golf, have a BBQ, or spend time with family were all described as free activities. Some participants cited concerns that alternative locations for social gatherings, such as restaurants, made it difficult to plan group gatherings, such as church socials, whereas a park was an easy location to use.

The free use of city parks was contrasted by one participant with the cost of accessing national or provincial parks. These parks involve driving to get there and often a park fee for admission. Accessing nature in urban parks was, therefore, an important way to provide access to nature for all and was described as one of the few ways people can connect with nature for free:

*There should be no deterrents at all. Those parks were made for the people of this country and they should be free. And that's why I'm so much for our parks here remaining free. (V)*

In addition to the themes found across participants, the method used gave rise to written passages about each participant's experience of mental restoration in city parks. Examples of these passages can be seen in Appendix F. The four main themes and subthemes discussed were drawn from the analysis of interviews with 15 participants in this study. However, these themes

can be linked back to existing literature and can be explained from the perspective of the two theories discussed during the literature review: (a) attention restoration theory and (b) psychoevolutionary theory. This will be discussed in Chapter 5.

## **Chapter 5: Discussion and Conclusions**

Mental illness is an important cause of disability, premature death, and lost productivity in Canada (Dewa et al., 2010; Lim et al., 2008). Specifically, depression is a significant component of this burden of disease (Lim et al., 2008). The environments in which people live and work influence their health and thus have potential to be part of the solution to mitigate loss of health. Given the majority of Canadians live in cities, urban built environments may have a role to play in influencing population health. Specifically, urban green space may provide a place where residents can undertake activities that can be supportive for positive mental health. Associations between green space and mental health have been examined through numerous quantitative studies; however, a gap remains in our understanding of the individual experience of urban green space.

To address this gap, I have used a qualitative approach to examine how park users experience the time they spend in parks and the meaning and importance they attribute to these experiences. Another goal was to examine the meanings attributed to different park structures and how they influenced the overall experience. Participants were adults who frequented man-made urban parks in Lethbridge, Alberta. While many participants also visited wilderness areas and parks outside the city (i.e., national and provincial parks), they were asked to focus on their experiences in urban parks. Urban parks were selected, as these areas are most accessible to the public on a regular basis and, therefore, may hold increased potential to influence health.

### **Study Discussion**

The findings of this study highlight four key themes identified by the 15 participants I interviewed. Three themes focused on the types of connections participants experienced, which included connections to nature, connections to the community, and connections to themselves.

The fourth theme centred on park features and how they facilitated or hindered the experience of mental restoration in the park. These themes will be discussed in the context of current theoretical perspectives and the research literature.

**Connections to nature.** The first key theme highlighted in this research is the connection people felt to nature in urban parks. The two subthemes were (a) engaging the senses and (b) viewing wildlife. Participants described an overall sense of being connected to nature during and after spending time in parks. Participants described how they were attracted by natural stimuli through different senses (e.g., visual, auditory, etc.) as well as attracted to opportunities to observe wildlife. These findings are not surprising given historical records show that humans have had an emotional connection with nature for centuries and that this relationship may extend back farther than our records do. The biophilia hypothesis, as described by E. O. Wilson (1984), addressed this relationship by supposing that humans are innately drawn to “life and lifelike processes” in the world around us (p. 1). This focus on life has been described as an instinctual response to our environment that influences our perceptions of the world, the value of other organisms, and our own value (Wilson, 1984, p. 2). My research findings were consistent with the biophilia hypothesis, as participants similarly identified a connection to nature or elements of nature directly, and this natural environment provided something lacking in an urban, man-made environment. Even though some participants acknowledged that urban parks are man-made, the elements of nature and the emotional appeal of nature were still present for them.

***Engagement of senses.*** Under the larger theme of connection to nature, a subtheme identified in this work was a connection to nature through the engagement of senses. Stimuli that encouraged participants to observe, hear, smell, and feel the natural elements around them

facilitated the experience of connection with nature. Some examples of these stimuli were the feeling of the sun on one's skin or the wind moving against the person. Many participants also noted changes in their feelings of stress in association with the feeling of connection to nature. Sensory engagement links to the concept of fascination discussed in attention restoration theory (S. Kaplan, 1995).

*Viewing wildlife.* Another subtheme highlighted the connection participants noted feeling to nature through viewing wildlife. Observing wildlife especially seems to create the state of fascination; however, observing other more constant natural elements did as well, although perhaps the observer was less aware of the effect. The response people have to observing wildlife is one that they are conscious of themselves. This was evident in the way many participants recounted seeing wildlife as an important event that takes place in the park and as something worth telling their friends and family. The fascination that develops as a result of seeing other natural elements such as trees and lakes was less evident, and participants may not have been as aware of the effect of seeing these on their overall experience of mental restoration.

Observing wildlife may be important for the development of a connection to nature because people perceive it as an indicator of biodiversity or of a thriving ecosystem. A recent study found a positive association between well-being and participants' perceived richness of birds, butterflies, and plants in a park setting (Dallimer et al., 2012). This same study indicated that participants were generally poor judges of actual biodiversity. I hypothesize that since wildlife tends to be more easily observed, counted, and remembered than plants or insects, people may take the presence of animals to indicate higher levels of biodiversity and then experience a greater feeling of well-being about their environment. This thesis has added to the knowledge of this phenomenon by highlighting the way wildlife encounters stand out to

participants as important and memorable events from their time in a park. Perceived biodiversity may contribute to the development of the feeling of an extensive environment, which is one of the components of a restorative environment according to S. Kaplan (1995).

S. Kaplan (1995) presented four main components of a restorative environment. Taken together, the subthemes of sensory engagement and observing wildlife both contribute to two of these components: (a) fascination and (b) extent of the environment. The first, fascination, can readily be achieved by the connection to nature as described here. The second component of a restorative environment that can be created through a connection with nature is an extensive environment. The sense of a connection with nature, as described by participants, came from not one but many elements of the environment. By experiencing an overall connection to nature, rather than just to one element of it, participants were describing an extended environment that affected their mental health. The presence of multiple components of a restorative environment facilitates the experience of mental restoration (S. Kaplan, 1995).

This line of thinking was further developed with psychoevolutionary theory. Emotional responses to natural environments were described by Ulrich and colleagues (1991) as being “central to the psychological components of stress and restoration” (p. 207). Emotional responses were described by participants as part of the feeling of connection to nature. These instinctual emotional responses to natural settings can affect attention by priming an individual for a restorative experience, which can re-establish capacity for direct attention. In addition, they can contribute to stress reduction. This shows a meshing of attention restoration theory and psychoevolutionary theory. A negative emotional response (i.e., fear) may prime attention to be depleted, as attention is directed towards the threatening stimuli and stress is experienced.

Positive emotional responding can lead to decreased stress; this link was supported by the present research findings.

Overall, mental restoration can involve both stress reduction and attention restoration. The findings supported the idea that mental restoration is linked to the experience of a connection with nature. This was also reflected in the recent work of Wolsko and Lindberg (2013), which identified an association between connection to nature and positive psychological well-being. The psychological benefits were shown to be greater still when participants were engaged in an appreciative outdoor activity—one that emphasized observing and appreciating the outdoor environment (Wolsko & Lindberg, 2013).

My thesis research findings have also supported the idea of the association between the feeling of connection to nature and psychological well-being. The subthemes of sensory engagement and observing wildlife may illustrate some of the feelings people experience during an appreciative outdoor activity, as defined by Wolsko and Lindberg (2013). Further research could examine the type of activity and the way the connection to nature is experienced. Further research may also examine the links between the sense of connection to nature, perceived biodiversity, and sense of well-being.

**Connections to community.** Connections to community emerged as a major theme in this research. Participants felt this connection through direct social contact as well as through a more abstract feeling of connection with a particular group. Direct social contact was described in two subthemes: (a) brief encounters and (b) time spent with family and friends. Group connection was described in two subthemes: (a) observing others and (b) inclusivity.

***Brief encounters.*** Brief encounters referred to short, unplanned interactions with both strangers and friends, such as greeting one's neighbours. These were generally positive



experiences. In some cases, brief encounters led to the development of lasting relationships. Increased positive social contact has been linked to a lower risk of poor mental health (Evans, 2003). One reason this may be true is because social contact can increase social support (both perceived and actual), which in turn is linked to increased coping and better mental health. Brief encounters with other people in the community may help to increase people's perceived social support. In cases where a lasting relationship formed between two people, actual social support may have increased as well.

***Time spent with family and friends.*** Time spent with family and friends was generally described as planned outings to the park that lasted longer than brief encounters did. For some participants, these were infrequent and did not occur every time they visited a park. In contrast to the subtheme of brief encounters, time with family and friends was more indicative of a sustained relationship with others. Therefore, these types of social interaction may be more likely to contribute to actual social support in addition to perceived social support. This is an important resource for health. However, direct social contact was not the only form of social contact experienced by participants. Many experienced indirect forms of social contact as well.

***Observing others.*** The subtheme of observing others was found in indirect social contact, where there typically was no direct interaction between people, but participants derived positive emotions or gained knowledge from observing other people in parks. This helped participants feel as though they were a part of the greater community or of a particular group. This sense of community connection tied back to attention restoration theory (R. Kaplan & S. Kaplan, 1989; S. Kaplan, 1995) and the concept of an extensive environment. Stimuli must relate to one another to form a cohesive environment. The social environment can be considered

as part of the overall restorative environment. Therefore, an extensive social environment may help contribute to the restorative environment in an urban park.

*Inclusivity.* The final subtheme was inclusivity, which was described as the social and physical environments in a park that made people feel as though they belonged or were welcome in the park. Some participants described that they felt as though they were part of a larger group, such as park goers, runners, dog-walkers, and so forth. Sani, Herrera, Wakefield, Boroch, and Gulyas (2012) described group identification as a way to capture the concept of social integration. Group identification is a “subjective sense of belonging to the group and of commonality with other in-group members” (p 782). They posited that this concept also contributes to increased mental health. Group identification is a concept closely aligned with community connections expressed by research participants. This form of community connection was described by participants as something they experienced by observing others and meeting like-minded people. Sani and colleagues found that group identification influenced mental health independent of social contact, which refers to the direct interaction between two people. Thus, participants who described direct and indirect subthemes of connection to community may all have experienced the mental health benefits. This may be captured in the overarching concept of social cohesion.

One study identified social cohesion as a determining factor in park use (Seaman, Jones, & Ellaway, 2010). When people felt as though they were a part of the group of people who used the park, they were more likely to use the park themselves; the feeling of being outside the group was a barrier to their participation. Recent studies have also identified social cohesion as an important mechanism mediating the association between green space and mental health benefits (de Vries, van Dillen, Groenewegen, & Spreeuwenberg, 2013; Groenewegen et al., 2012). The

results of this thesis have supported these findings by similarly suggesting that feelings of inclusivity within a green space enhanced the mental restoration experienced when using that space. Further, these thesis findings built on an understanding of the potential mediating role of inclusivity by suggesting that both direct and indirect social contacts may be important aspects of the creation of park users' identities. Having these identities in place may, in turn, encourage people to spend more time in parks and enhance their experience of mental restoration.

**Connections to self.** The theme of connections to self was marked by an overall internal focus. In describing this theme, participants spoke about being conscious of their thought patterns and emotions and being able to reflect on themselves. In contrast to the theme of connections to community, many participants described experiencing connections to themselves when they were alone in a green space rather than in the company of others. These findings supported the work of S. Kaplan (1995), where reflection was described as something that may occur as a result of fascination to enhance the restorative experience of a person. The turning inward of conscious thought has also been linked to the concept of mindfulness. S. Kaplan (2001) described the development of mindfulness as something that can be used to enhance the restorative experience.

Mindfulness is a construct that has been described many ways, owing in part to its origins in Buddhism and presence in other fields of study. The Buddhist conception of mindfulness has changed as it has been adopted into a Western viewpoint and into Western medicine. In addition, mindfulness has been conceptualized in different ways for different contexts: for example, as a formal mindfulness intervention as opposed to a naturally occurring state of mind. I will adhere to one of the most commonly used definitions of mindfulness, which is “paying attention in a particular way; on purpose, in the present moment, and nonjudgmentally” (Kabat-

Zinn, 1994, p. 4). This definition reflects mindfulness as a state of mind or awareness; I will consider it as such for the remainder of this discussion.

The concept of mindfulness encompasses the way someone pays attention to both external and internal stimuli. For example, one may pay attention to an external stimulus such as the warmth of the sun, and a person may also be mindful of his/her own psychological or emotional response to the sun. Correlation studies have indicated a link between mindfulness and many aspects of improved mental health (Keng, Smoski, & Robins, 2011). In addition, a correlation has been seen between mindfulness and performance on sustained attention tasks, again indicative of the link between mindfulness and attention restoration theory (Keng et al., 2011).

One way that urban parks influence mental health is through encouraging park users to connect to themselves, as evidenced in my findings. This connection may be experienced through a state of increased mindfulness, allowing park users to better experience their own reactions to the environment around them, such as noticing that watching children play evokes a feeling of contentment. At the same time, they may experience a connection to nature through increased mindfulness of external stimuli as demonstrated in my study among those who described enjoyment from observing flowers or hearing the sound of running water. This state of increased mindfulness (of external and/or internal stimuli) can contribute towards decreased stress, improved ability for direct attention, and improved mental health. The concepts of connections to self, to nature, and mindfulness may be encouraged by the natural environment and other environmental stimuli in an urban park, showing overlap between the main themes in this research. The subthemes of connection to self included (a) physical connections to self, (b) connecting with the emotional self, (c) connections with history, and (d) thoughts and

emotions. Through mindfulness, a person may further their experience of connections to their body, their emotions, their history, and their thought and emotional patterns.

*Physical connections to self.* The first subtheme of connections to self is physical connections to self. This was described by participants as the interconnectedness of physical and mental health, the way in which one influences the other, and as the psychological benefits of physical activity. The benefits of incidental physical activity, such as walking through a park, were discussed not only as physiological benefits, but also as psychological benefits by participants as well. Recent research has suggested that while green space influences health through increased physical activity, this is likely not a major driver of the association between green space and health (Groenewegen et al., 2012). Further analyses with the same data concluded that the amount of green space in a person's neighbourhood is not related to amount of physical activity and that physical activity does not explain the relationship between green space and health (Maas, Verheij, Spreeuwenberg, & Groenewegen, 2008). The complex relationship between physical activity, mental health, and green space is difficult to decipher.

A multi-study analysis found that mental health benefits of green exercise were evident within a 5-minute time span and with low intensity exercise (Barton & Pretty, 2010). This suggests that amount and intensity of physical activity are not key factors in the relationship between green space and mental health. My research has suggested that the psychological benefits of physical activity in green space were highly valued by many participants. The purposeful sense of using one's body may be a factor better associated with mental health benefits than physical activity duration and intensity. This may help to explain the immediacy of benefits seen in Barton and Pretty's (2010) work. Participants may immediately feel that they are accomplishing purposeful green activity, independent of intensity or duration. Further

research into this may be useful to determine if the concept of purposefulness does actually influence mental health benefits, and if so, what types of green activity do people find purposeful?

Another important aspect of Barton and Pretty's (2010) findings is that the youngest age group (<30 years old) experienced the greatest positive change in self-esteem and mood (p. 3951). Addressing self-esteem, particularly in young adults can have a significant impact on mental health. Although effect sizes decreased with age, they were in a positive direction for all groups. Given that low intensity green exercise is an extremely low-risk intervention, the clinical implications may be that it is worth trying with a wide range of clients. My findings suggest a link between green physical activity and a connection with the self, which may further explain the benefits of green exercise.

*Connecting with the emotional self.* The subtheme of connecting with the emotional self was mostly described as getting in touch with oneself or returning to one's roots. This was linked with activities and thoughts that were considered to be important or authentic to people, such as taking time to pursue a passion such as running or photography. Also important was the idea of taking time for oneself, regardless of the activity. This subtheme was also characterized by an internal mindfulness as people consciously considered their emotional selves. It may be that a restorative park environment can facilitate this state of mind and the development of the practice of mindfulness. Further investigation of how environment influences the development of this state of mind may be important for programs or therapies that teach mindfulness. A park environment may prove to be a location where this state of being is more accessible to some people in the course of their daily life.

***Connections with history.*** Connections with history were described in the findings in two ways: (a) connecting to community history and (b) connecting to personal history. In the first case, this subtheme links closely to the main theme of connection to community; however, connecting to community history was generally described as a feeling that occurred while alone, lacking actual contact with other people. Despite this, feeling connected to community history, such as feeling connected to people who lived on the same land in the past as one participant described, may contribute toward group identification and the experience of social cohesion, which may be an important mechanism driving positive health outcomes (Groenewegen et al., 2012). Personal connections with history occurred when elements of the park environment triggered thoughts of their childhood or of other important times in their lives. This experience may be linked with mindfulness and the overall connection to the self, as it encourages conscious thought and examination of oneself.

***Thoughts and emotions.*** Another way that a natural environment can affect a person is through influencing their thoughts and emotions, which was another important subtheme in my results. In contrast to experiencing mindfulness, experiencing an emotion may be a more easily accessible and perhaps a less involved experience. For example, a person walking through a park may experience a sense of happiness. Indeed, many participants described feeling positive emotions as they spent time in parks. This is experiencing the emotion itself. If the person, in addition to feeling happy, turns their attention to either external stimuli (i.e., park features influencing their emotions) or internal stimuli (i.e., consciously examining the emotion itself), then they are moving into the experience of mindfulness. Thus, these are two different ways that the park environment can encourage someone to connect with themselves. It is likely a person will experience both positive emotions and mindfulness, either simultaneously or at different

times, depending on the context of their park experience. Experiencing positive emotions also relates to the stress reduction component of psychoevolutionary theory and is correlated with a reduction in stress, including physiological stress markers (Ulrich et al., 1991). In addition to the internal concepts of emotions, intent, and mindfulness, the environment external to a person will influence their experience.

**Built environment as a facilitator.** A major way that the built environment in an urban park can influence health is by creating opportunities for mental restoration by creating an environment where people can experience nature and connect to themselves and to their community. When these opportunities occur naturally, with minimal effort on the part of the person, mental restoration may be more likely to occur and more likely to be a part of a person's every day environment. This, in turn, will have a greater positive effect on the stress and overall mental health of a person. These opportunities may be created through park features and accessibility. The subthemes identified focused on (a) specific park features, (b) accessibility and safety, and (c) free cost.

***Specific park features.*** The most noticeable aspect of the built environment in a park that emerged as a subtheme related to the specific park features. Park environments that created a feeling of being distinct from the city were described by participants as favourite places. This was done in many ways, which included through placement of trees, hills, and pathways to create physical and visual distance from the surrounding urban environment. Constructing parks in this way addresses two aspects of attention restoration theory that are central to the restorative environment: (a) extent and (b) being elsewhere (S. Kaplan, 1995). Allowing people to feel that they are away from their day-to-day places of living, particularly those with stressful connotations, can help to create a restorative environment (S. Kaplan, 1995). Creating a rich



environment that has extent also contributes towards a restorative environment (S. Kaplan, 1995). This can also be done through the built environment, by engaging many senses and providing a variety of visual features. While attention restoration theory describes these environmental elements as necessary for a restorative experience, psychoevolutionary theory describes them as conducive to stress reduction (Ulrich et al., 1991). As stress reduction can be a large component of mental restoration, the close link between these two theories has once again been illustrated.

In the research literature, preference was shown for green spaces with water features (Ogunseitan, 2005; Völker & Kistemann, 2011), flowers (Ogunseitan, 2005), and perceived biodiversity (Dallimer et al., 2012). An audit tool used in another study to evaluate green space quality considered naturalness, variation, and colourfulness, among other variables, as important for the quality of the green space (van Dillen, de Vries, Groenewegen, & Spreeuwenberg, 2012). Much of the existing green space literature regarded green space as uniform, with little regard given to variation in features. What was often measured is the amount of green space or the distance from the green space to a person's home or workplace. Studies using satellite data often could not differentiate between purposeful green space, such as a park, and incidental green space, such as an overgrown lot. More research should consider the quality or variety of the built and social environments of green spaces to better understand the relationship between green space and health.

***Accessibility and safety and free cost.*** The final two subthemes are accessibility and safety and free cost. These are highly related because the fact that parks are free makes them financially accessible. The theme of accessibility and safety refers to the environmental and social aspects that make a park useable and inviting to different people in the community.

Results showed that accessibility was highly valued, even by people for whom accessibility was generally not an issue. Accessibility issues were not mentioned as barriers for themselves by participants in this study, but were often mentioned in the context of other people. Since all participants in this study frequented parks, it can be assumed that they experienced few barriers to using parks or that they were able to successfully negotiate those barriers. Further research should consider the perspectives of people who do not use parks, but who may want to and stand to benefit from it.

It is important, however, to note that not all people enjoy time in parks or experience mental health benefits from their time there. There are a variety of reasons for this, including cultural experiences, individual experiences, and context of the potential park visit. Seaman et al. (2010) found that even when parks were physically accessible, people did not use parks when they felt socially excluded from the group the parks are designed for. Future research may consider the social determinants of mental restoration in green spaces and the role of social inclusion in motivating urban park use.

The four main themes identified in this research were a product of the interactions between participants, researcher, and context. This has led to both strengths and limitations in the research, which should be taken into account when considering the findings and their implications.

### **Strengths and Limitations**

The main strength of this study was the use of a phenomenological approach to reveal the importance and meaning of mental restoration and time in city parks as expressed by the research participants. This focus on lived experience gave context to each theme and subtheme. Thus, a point of social contact was seen not as a fleeting experience, but as a building block in creating

someone's sense of community. Limitations of this research included that the findings did not directly address the role of culture and of past experiences with nature—two concepts that can affect mental restoration. It is important to understand how these concepts influence mental restoration: in particular, as community and intervention programs are designed around contact with nature. In addition, this study did not address frequency of park use from an objective perspective; this variable may also influence how people experience mental restoration in urban parks. Lastly, the study was small and geographically limited to a small city in southern Alberta. Experiences of mental restoration certainly vary between people and between settings. Awareness of the strengths and limitations of this study is important for contextualizing the implications of the research.

### **Implications**

These findings will be of interest to many groups, including municipal government and services, community groups and health care professionals. Urban planners with the City of Lethbridge may benefit from the additional perspectives on the built environment within parks, and how they are experienced by some people. Municipal services as widely ranging as police services and community services will find information on park experiences valuable. Police services patrol operations division is responsible for patrolling public spaces including city parks. Increased knowledge of how citizens are using parks can help them to better understand the park environment. In addition, this division has identified quality of life issues as one of their areas of responsibility (Lethbridge Regional Police Service, n.d.). As the use of parks is linked to wellbeing and quality of life, increasing their knowledge of how people are using parks to impact their quality of life may have important implications for their work. Community and social development services within the city of Lethbridge works to provide programs and

services to people in the community (City of Lethbridge, n.d.). Understanding how people use parks, as well as the importance of parks may inform the work they do within the community. Specifically, outreach programs for various population groups may consider introducing people to neighbourhood parks as a way to increase their connections to the community.

Another segment of the municipal services that might be interested in these research findings is the parks department. This department has explicitly noted many benefits of parks, including physical and mental health benefits (City of Lethbridge, Parks Benefits, n.d.). However, they are largely basing their descriptions of these benefits on research from other countries, and therefore the addition of research from the local context will serve to enhance their knowledge of these benefits, and make them more relevant to people in Lethbridge.

The research findings may also have implications to groups and programming outside of municipal services that focus on improving health and quality of life through green space. By focusing on the creation of connections as described by the research themes, they may be able to increase the meaning and value of their programming. Lastly, these findings may be useful for anyone with stewardship of green space, as they may help to identify the health value that their green spaces have for the community and how they can be emphasized. This may help to illustrate the value that the space itself holds for the community.

The findings of this study also have implications in the context of this research field. The qualitative approach has allowed for the development of thick description of the experience of mental restoration in green spaces. This compliments the existing correlational research to provide context in terms of meaning of the experience for people. It also contributes to the discussion about physical activity in green space by indicating that physical activity in green space may be valued for its psychological benefits as much as or more than its physical ones.

The findings of this study around connection to community are supportive of existing theories of social cohesion as a mechanism through which green space affects health (Groenewegen, van den Berg, de Vries & Verheij, 2006) . Future research should continue investigating the mechanisms which mediate the relationship between green space exposure and health.

## **Conclusion**

The findings have suggested that mental restoration during and after exposure to urban green space can play an important role in supporting mental health for some residents of Lethbridge. The experience of mental restoration is complex, dynamic, and individualized; however, the broad themes of connections to nature, to community, and to oneself have illustrated some of the ways through which the relationship between green space and health may be manifesting. Across participants in this study sample, these themes interacted to create the essence of mental restoration in urban parks. The findings further suggested that the built environment can create increased opportunity for mental restoration. These findings support continued maintenance and development of urban green spaces to create opportunities for residents to experience mental restoration and support their own positive mental health.

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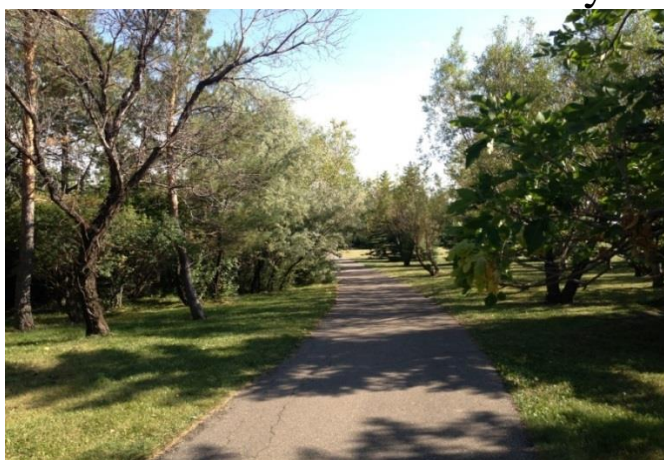
## Appendix A: Recruitment Posters

# Do You Enjoy Being in Parks?

Does being in a park influence your sense of well-being?

Do you like to spend time in City of Lethbridge parks?

Then we would like to talk to you!



Researchers at the University of Lethbridge are conducting a study on the influence of green space on mental well-being.

**What you will be asked to do:** Participate in a 1-hour recorded interview about the impacts of city parks on health & well-being.

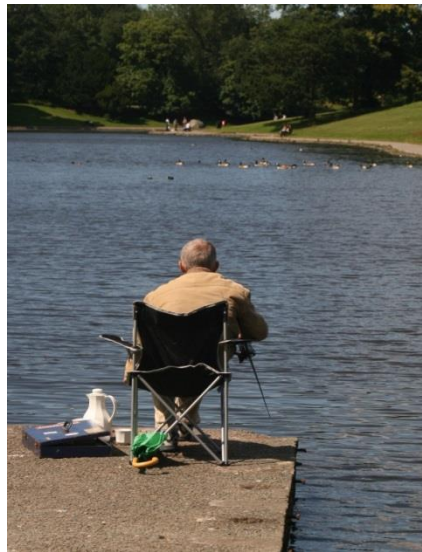
**To learn more:** Contact Daniella at: [email address]

This research is conducted under the direction of Dr. Cheryl Currie, Faculty of Health Sciences, and has been reviewed and approved by the U of L Human Subject Research Committee.

<b>Parks and Wellness Study</b> Daniella San Martin-Feeney [email address]
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<b>Parks and Wellness Study</b> Daniella San Martin-Feeney [email address]

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<p><b>Parks and Wellness Study</b>                  Daniella San Martin-Feeney                  [email address]</p>	<p><b>Parks and Wellness Study</b>                  Daniella San Martin-Feeney                  [email address]</p>	<p><b>Parks and Wellness Study</b>                  Daniella San Martin-Feeney                  [email address]</p>	<p><b>Parks and Wellness Study</b>                  Daniella San Martin-Feeney                  [email address]</p>	<p><b>Parks and Wellness Study</b>                  Daniella San Martin-Feeney                  [email address]</p>	<p><b>Parks and Wellness Study</b>                  Daniella San Martin-Feeney                  [email address]</p>	<p><b>Parks and Wellness Study</b>                  Daniella San Martin-Feeney                  [email address]</p>
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## **Appendix B: Telephone Screening**

Screen to be administered by phone or email

1. Are you over the age of 18?
2. Do you live, work or spend leisure time in Lethbridge, AB?
3. Do you regularly visit city parks (prompt: city-owned, in Lethbridge, e.g. Nicolas Sheran, Henderson)?
4. Mental Restoration Screen (yes to one or more)
  - a. Do you feel that the park influences your outlook on life?
  - b. Does spending time in the park make you feel calm or peaceful?
  - c. Do you feel a connection to something larger than yourself, or a spiritual connection when you spend time in a park?
  - d. Do you experience your time in a park as a break from your day to day life?
5. Are you willing to speak with me about these experiences in an interview? The interview will last approximately 1 hour, and will take place in a public space that is convenient for you.

## **Appendix C: Media Coverage**

### **Lethbridge Herald**

#### **Article by Caroline Zentner appeared March 2, 2014**

A University of Lethbridge master's student is investigating the link between mental well-being and spending time outdoors. Daniella San Martin-Feeney, a health science student, is looking for people who are willing to talk about their experiences being outdoors in city parks.

“I'm looking at individual's experiences with city parks, so the parks within Lethbridge, and their experiences with mental restoration or mental well-being,” she said. Existing research has shown a link between mental health and spending time in green spaces, specifically that being outside can decrease stress and affect mood and feelings. Many people report feeling happy, peaceful or ready to work after spending time outside. Many existing studies have used a survey method where participants are asked how they feel on a scale of one to five. San Martin-Feeney wants to dig a little deeper and give participants the chance to explain their feelings and how they think it affects their mental health.

“It's important given the widespread issues with depression and mental illness to investigate these kind of resources that we might already have in our community that could help people proactively support their own mental well-being,” San Martin-Feeney said.

San Martin-Feeney is looking for 15 people to participate in a conversational interview.

“I really just want them to share their experiences,” she said.



After the interviews have been completed, San Martin-Feeney will analyze the data and pull out similarities and differences.

“Hopefully some of the takeaway from that will show the value of parks for health, not just for recreation or aesthetic purposes,” she said.

She’ll also look for some common themes about park features that seem to have the most bearing on people’s health. San Martin-Feeney said she plans to share her results with any community groups who have stewardship over green or natural spaces.

Anyone who’d like to participate can send an email to [email address]

<http://lethbridgeherald.com/news/local-news/2014/03/02/parks-and-relaxation/>

Radio Canada, Le Café. ( 2014, March 6). “Les activités à l’extérieur sur la santé mentale” Retrieved from [http://radio-canadapodcast.com/emissions/le\\_cafe\\_show/2013-2014/archives.asp?date=2014-03-06](http://radio-canadapodcast.com/emissions/le_cafe_show/2013-2014/archives.asp?date=2014-03-06)

Vogt, T. (2014, March 5). *Cold weather health impact* (Video pod). Retrieved from <http://calgary.ctvnews.ca/video?clipId=301811&binId=1.1201914&playlistPageNum=1>

## **Appendix D: Consent Form**

Dear Sir or Madam:

You are being invited to take part in an interview. The objective of the interview is to better understand how people experience city parks, and how spending time in parks may influence mental well-being. This research is part of a Master of Science thesis project. Participation is voluntary. If you choose to participate, I will ask you questions about your thoughts and experiences in city parks in Lethbridge. This will take place during a single in-person interview that will last about 60 minutes. With your permission, I will audio-record the interview. If you do not wish to be audio-recorded, I will take written notes during our interview. There is no risk to participating in this interview. I can give you the name and telephone number of counseling and/or mental health services in Lethbridge, if you want this information.

You might find the interview to be enjoyable and rewarding, because you will have the chance to talk about your experiences in city parks. By taking part in this research, you may also help researchers better understand how parks affect health.

Your data will be kept confidential. This means that your name and other identifying information will be taken out of the transcript of the interview. Only I will hear the audio recording of the interview, and I will erase it after it is transcribed. Anything you say that could identify you during the interview will be deleted.

Participation is voluntary. If you decide to participate, you will receive a \$10 gift card in appreciation of your time. You can decide to withdraw from the interview at any time, for any reason. Your data would then be destroyed, and you can keep the gift card.

I will share the results of this study in reports read by health professionals and researchers. I might also present the results to community and academic groups. Your name will not be used. If you want to receive a copy of the results, or if you have any questions, please contact myself, Daniella San Martin-Feeney, at [email address] or [phone #].

Dr. Cheryl Currie, of the Faculty of Health Sciences, is supervising this research. She can be reached at [email address] or [phone #]. . If you have questions regarding your rights as a participant in this research, contact the Office of Research Ethics at the University of Lethbridge at [email address] or [phone #]. .

I have read (or have been read) the above information about this research study on city parks and mental well-being, and consent to participate in this study.

\_\_\_\_\_ (Printed Name)

\_\_\_\_\_ (Signature)

\_\_\_\_\_ (Date)

I consent to be audio-recorded.

\_\_\_\_\_ (Signature)

\_\_\_\_\_ (Date)

## **Appendix E: Interview Guide**

Date:

Time:

Place:

Name:

**I would like to ask you some questions about how you experience parks, and how they influence your mental well-being. Please think about your experiences in parks in Lethbridge.**

1. Can you please describe your experience of how a park influences your mental well-being? Take your time, begin when you are ready, and just talk me through what that's like for you.
2. How does the environment of the park affect your experience?
  - You said X, and that seemed important. Could you tell me more about it?
  - Could you give me an example of a time you felt that being in the park affected your well-being?
  - Can you give me another example of a time you experienced this?
  - Are there any other aspects of the park environment that affect your experience?

## **Appendix F: Example of Individual Description of Mental Restoration**

**Textural description:** The experience of parks for R was centred on an appreciation for the diverse parks and park features. He primarily goes to walk his dog and selects the park mostly based on proximity to where they are that day, but regardless of where they are, “[they] will go to a park.” In this way, R has frequented many different parks throughout the city and found that “all those parks are different in their character, and you can get different things from those parks.” R described the appeal of being closer to nature and how the experience “allows your mind to shift away from other daily activities,” giving your mind time to relax. He also described the way people in a park are more friendly than they are in other environments; it is easier to interact with people, get to know neighbours. He has found this especially true with other people who also have dogs—meeting other people with dogs in parks has led to several ongoing friendships.

**Structural description:** The experience of parks for R was influenced by the built environment of the park—different parks holding different appeals. It was important to him that the parks are accessible to all people and that free parking is available at the parks. R described different parks as having “different flavours” that provide “different services” to the city. Ease of commuting on walkways that connect and go through parks was important as well—trying to get from point A to point B when the pathway takes a long, winding route was frustrating. The park environment influences people to encourage slowing down, interaction with others, and deep thought, especially in contrast to the downtown street environment. “They’re (parks) generally a more friendly kind of environment than you’ll find, say, walking down the street in Lethbridge”.