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Person, Perception, and Place: What Matters to Health and Quality of Life

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Abstract Interest in understanding how characteristics associated with where people live, in addition to the characteristics of the people themselves, affect health outcomes has risen sharply in recent years. While much of the research examining this question focus on teasing apart effects of place and individual on outcomes, less attention has been paid to examining how individuals' perceptions of where they live may provide some clues to better understanding the influence of place on outcomes. We present findings from analysis undertaken that incorporate the subjective responses of individuals, residing in three socially contrasting neighbourhoods, to their local environment. Our first question addressed whether perceptions related to neighbourhood and city of residence matter to self rated health and quality of life independent of individual characteristics, while the second question examined whether the perceptions and individual characteristics are modified by the neighbourhood socio-economic context. Our results show that perceived neighbourhood characteristics, in addition to individual sociodemographic factors, are significant correlates of self rated health and quality of life. Moreover, we show that the type of

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perceived neighbourhood characteristics and the magnitude of their influence on self rated health and quality of life vary depending on whether they live in high- versus low-socioeconomic status neighbourhoods.

Keywords Quality of life · Health · Place · Perceptions of place

1 Introduction

In recent years, a consensus appears to be forming over recognition of the powerful influence of an individual's social status on health. Such agreement is not nearly as clear in our understanding of how social status gets ''under the skin'' to influence health. Over time, many theories and explanations for this observation have been offered but none have endured or have been widely accepted as the most likely explanation. The closest researchers have come to a general agreement is that the observed disparities in health are driven largely by a complex set of causal processes, operating across many individual and societal levels, rather than resulting from research design limitations or artefacts (Goldman 2001). A focus for many of the contributions in the literature recently has been teasing apart the effects on health of the local social and physical environments in which people live (context) from those characteristics of the individual *per se* (compositional). While these efforts represent an advance towards fully understanding the mechanisms that underlie the social determinants of health, few of the studies have incorporated the perceived or the subjective response of individuals to their local environment. The critical role played by individual's (subjective) responses to his or her environment in shaping the internalisation of external social factors is well known (Antonovsky 1987, Pearlin 1989). These subjective responses may provide the bridge that links the external environment (whether it be social, cultural or physical) to the biological processes internal to the individual. This paper presents analyses undertaken that incorporate the subjective responses (termed here as perceived) of individuals to their local environment, and examines these responses in relation to the compositional factors of individuals living in socially contrasting neighbourhoods against two outcome variables: self-assessed health and overall quality of life.

This research is part of a larger project that examines the process and results of a multi-stakeholder approach to the development and use of quality of life indicators in achieving a healthy, sustainable Saskatoon community. Saskatoon is a medium-sized city of about 207,000 people in the prairie province of Saskatchewan, Canada. Municipal government, community-based organizations (CBOs) and university-based academics have partnered in the goal of the ongoing sustainability of Saskatoon as a healthy city with an improving and a more equitably distributed quality of life.

2 Literature Review

With repeated demonstrations of the positive relationship between individual socio-economic status (SES) and health, there is growing awareness that one of the most important research needs in health inequalities scholarship is to better elucidate the mechanisms by which differences in social and economic environments manifest and produce systematic differences in health status in populations (Kawachi and Kennedy

1999; Krieger 1994; Kaplan and Lynch 1997; MacIntyre 1997; Adler and Ostrove 1999; Marmot et al. 1995). Empirical research examining potential causal pathways and mechanisms have most often focused on lifestyle or behaviour, psychosocial factors (most commonly stress, control, social support) (House 1988; Syme 1994; Marmot 1999; McEwen 1998), access to public services or resources (Kaplan et al. 1996), personal resources (Power and Hertzman 1999), physical environment, early childhood development (Keating and Hertzman 1999), and more recently broad constructs such as social cohesion and social capital (Kawachi et al. 1997), as key explanatory mechanisms for health inequalities. Implicit in all of these explanatory mechanisms is the central role of the local area and one's relationship to it in determining the life chances and health of individuals. Given the socio-economic segregation of local areas where people reside (Wilson 1987), one direction increasingly taken by researchers is examining the mechanisms or pathways through which place and the social relations within it shape the health status of individuals and populations (Kaplan 1996; Jones and Duncan 1995; MacIntyre et al. 1993; Robert 1999).

3 Incorporating 'Place' in Health Research

Studies that have examined the importance of differences in place of residence on health independent of, or in combination with, individual factors have increased sharply. Contributed by researchers from many fields, these studies have focused on understanding how characteristics of residential areas may affect individual-level outcomes such as mortality (Davey Smith et al. 1998; Kaplan 1996; LeClere et al. 1998; Sloggett and Joshi 1994; Waitzman and Smith 1998; Yen and Kaplan 1999; Wing et al. 1992; Morris et al. 1996), chronic disease among adults (Diez-Roux et al. 1997; Jones and Duncan 1995; Reijneveld 1998; Shouls et al. 1996), infant and child health (Brooks-Gunn et al. 1997; Leventhal and Brooks-Gunn 2000; O'Campo et al. 1997; Rauh et al. 2001; Roberts 1997; Pearl et al. 2001), self-assessed health (Humphreys and Carr-Hill 1991; Robert 1998), and other intermediate outcomes such as health-related behaviours, violence, employment, childbearing practices and single parenthood (Curry et al. 1993; Diez-Roux et al. 1997; O'Campo et al. 1995; Sampson et al. 1997; Yen and Kaplan 1998; Massey et al. 1991). Overall, these studies have found statistically significant variability in the outcomes studied due to differences across place-based characteristics, which persisted after accounting for individual-level differences such as socio-economic status. However, the magnitude of these associations due to independent effects of place-based characteristics has been modest. Furthermore, not all studies have shown even modest associations between place characteristics and health outcomes, with several recent studies reporting no statistically significant evidence for effects of local area or place on health independent of individual characteristics (Pampalon et al. 1999; Tremblay et al. 2002; Veugelers et al. 2001; Boyle and Willms 1999).

4 Theoretical Framework

Most previous studies investigating effects of area characteristics on health have failed to explicitly describe the theoretical framework underpinning their conceptualization of place, how it is defined and measured, and how it may affect health. While a rich tradition of theory, discourse, and empirical studies within certain disciplines in social sciences has

informed the prominence of place in shaping human relations, identity, attachment, and life-chances (Suttles 1972; Brower, 1996; Casey 1997; Forrest and Kearns 2001), surprisingly few studies on health have taken advantage of this cross-disciplinary knowledge. In epidemiologic studies place has often been analysed as one of three main descriptive constructs (others being Person and Time) or simply as a variable to control for bias. Recent use of this concept in epidemiologic studies, however, has begun to move beyond this limited descriptive role, attempting to incorporate more sophisticated notions of place, such as social cohesion or social capital, in investigations of health outcomes.

There is no single, all-inclusive definition or interpretation of place. For the purpose of current research however, Giddens' (1985) and Agnew's (1987) work offers a useful framework. According to this framework, place can be theorized as pertaining to at least two different scales, locale or location, and the subjective perception, 'sense of place'. Giddens, who uses the term locale to differentiate place from an abstract point in space, writes, ''*locales* refer to the use of space to provide the settings of interaction, the settings of interaction in turn being essential to specifying its contextuality'' (Giddens 1985, p. 271). Examples include family homes, neighbourhoods, and workplaces and are similar to how 'settings' is now used in the health promotion literature (Poland et al. 2000). These are essentially smaller scale (human scale) environments anchored in geography that are well recognized by individuals within them as central to their daily interactions. The purpose and functions served at the locale scale might be notably fostering an identity, attachment and belonging, making connections with others, and demonstrating or reflecting ones own values. Agnew extends this view to incorporate a definition of ''*location* as …. [as] the geographical area encompassing the settings for social interaction as defined by social and economic processes operating at wider scale'' (Agnew 1987, p. 28). Location is the geographic space, such as municipalities or cities, in which locales are situated. These entities are of larger geographical scale than locales, yet they may still elicit meaning for those who live within them.[1] Moreover, it is this socioeconomic and political level of place (location) that partly determines the perceived quality of the neighbourhood locale—the focus of our study—through *inter alia* zoning regulations, land use development, creating economic opportunities, and public program transfers.

The third element of this framework, sense of place, is the meaning people ascribe to, and in turn derive part of their identity from, the locales and/or locations in which they live.[2] The perceptions and meaning ascribed to locales and locations can have negative or positive connotations. For example, 'neighbourhoodism' is a term used to describe the stereotyping in media and public attitudes of poor, ghettoized neighbourhoods. The negative attributes of these areas are often attributed to people living there who, in turn, often internalize these features as being partly a reflection of their own lack of

[1] We recognize that the distinction between locale and location can be said to vary with the scale at which place-based effects are being studied. A nation could be the location in which states or provinces become locales; a state or province could be the location in which municipalities or cities become locales. Our preference is to restrict locale to those places, such as family homes, workplaces or neighbourhoods, where direct social interaction by individuals is most likely to occur; and to regard locations as hierarchically structured economically and politically bounded geographies, i.e., cities, provinces and nations are all locations of increasing scale.

[2] A significant body of theoretical and empirical-based studies discuss sense of place as an outcome, variously expressed by individuals, of interconnected psychological, social and environmental processes in relation to physical place(s). Sense of place thus has been examined, particularly in human geography, in terms of both the character intrinsic to a Place as a localized, bounded and material geographical entity, and the sentiments of attachment and detachment that humans experience and express in relation to specific places (Creswell, 1996; McDowell, 1997; Oakes, 1997).

self-worth, leading to poorer health or quality of life. A positive image of neighbourhood, in turn, may have a salutary effect by enhancing personal attitudes, behaviour and self-concept, and thereby health and quality of life (Kearns et al., 2000; Meegan and Mitchell 2001; Healey 1998).

A clearly conceptualised framework of place leads to unambiguous and appropriate definitions, and therefore measurement, of place and its effects on health. This is less of a problem in locales such as family homes and workplaces, where there exists substantial theory-based research that include health and quality of life studies incorporating various aspects of peoples' relationships with family, fellow workers and workplace conditions more generally. Most existing research on neighbourhood locales and municipal locations, however, has not presented a theoretical framework explicating their relationships to each other and to health. Terms such as neighbourhood, community, or more generally area or place, are often used but rarely distinguished or defined in relation to each other. While acknowledging that the criteria used for definition of areas and their relevant scale would necessarily depend on the outcomes and the hypothesized processes, recent commentaries have stressed the importance of conceptual clarity and definitions of the fundamental units of areas that are been investigated (Diez Roux 2001).

5 Perception of Place as a Mechanism

In place-based health research, a consequence of the ambiguity in defining the place being studied is the difficulty encountered in gathering data on how individuals perceive of, and their relationship to, his or her place of residence. This 'sense of place,' often-missing in previous studies, may be a key construct in place-based health research as it may provide the conceptual link between the exogenous area-based variables and the internal biological processes and systems in individuals. Area-level variables, however conceptualised, do not influence biological systems magically. Individuals' perceptions of and relationship to their local environment (whether they are to people living in the neighbourhood, or in relation to physical amenities, resources or services available) represent key mechanisms through which attributes of the local area begin to manifest in individual biological systems. While the idea of the importance of individual response to their environment (social, physical) is not new, and has been an enduring explanatory mechanism in several areas of research inquiry such as the health effects of income inequality, social capital and social cohesion, the specific application and integration of psychosocial mechanisms to place specific health research has not commonly been done. Inclusion of subjective variables in place-based health research would allow better specification of individual processes that link place-based variables to health, and testing whether living in different types of neighbourhood, for instance, have a differential impact on these individual processes and health.

A few studies that have examined the importance of how one perceives certain aspects of the local environment have found significant effects on health. In a study of four socially contrasting neighbourhoods in Glasgow, Ellaway et al. (2001) found that, after accounting for individual differences such as age, sex, and social class, neighbourhood of residence was associated with perceptions of problems and neighbourhood cohesion in the area, and these characteristics in turn, were associated with self-assessed health, mental health and recent symptoms. Collins et al. (1998) found that African–American mothers' perceptions of their residential environment such as police protection, personal safety, cleanliness and quietness were associated with very low birth weight outcomes even after controlling for maternal behaviours such as alcohol use and cigarette smoking.

Further advances in understanding the effects of place-based and individual-level factors on health are likely to be made by studies using primary data to investigate specifically processes through which neighbourhood or area effects mediate health outcomes. These studies would need to incorporate direct measures of individuals' perceptions of neighbourhood along with individual and place-based characteristics, and examine interactions such as the relation of neighbourhood socio-economic context to potential mediators of neighbourhood effects.

We present here results from a study that was conducted using residents from three neighbourhood types within one city. Our study addressed the following questions: (a) What are the most important individual and perceived neighbourhood and city related characteristics that are associated with self-assessed health and overall quality of life? (b) Do the significant individual and perceived neighbourhood and city related correlates of health and quality of life differ by the type of neighbourhood in which individuals reside? The first question addresses whether perceptions related to neighbourhood and city of residence matter to health and quality of life independent of individual characteristics, while the second question examines whether the perceptions and individual characteristics are modified by the neighbourhood socio-economic context.

6 Materials and Methods

This study utilized data from a telephone-based survey conducted in the city of Saskatoon, Saskatchewan, Canada. A primary objective of the Saskatoon Quality of Life Survey was to examine perceived quality of life, health and their heterogeneity by various determinants of these outcomes. The ability to study the importance of place of residence in an urban community to individual health and well-being was a particular feature, both in the design and analysis of this survey. Although the survey content had a broad focus, the multidisciplinary team of investigators (representing social epidemiology, urban planning, human geography, sociology, and anthropology) conceived and conducted this study with the intention of addressing two objectives. First, the study contributes to the rapidly growing area of inquiry into understanding the complex patterns of individual and place-based effects on health and quality of life. Second, with a more inclusive approach to research (i.e., involving community members through public forums in development of survey content and discussion of the policy implications of its findings) the study generates evidence that has a more willing and greater uptake by decision- and policy-makers, particularly at the municipal level.

7 Study Population and Sampling

The survey methodology has been described in detail elsewhere (Williams et al. 2001). A telephone survey was conducted based on a sample frame that included all registered phone numbers within the targeted areas of the city. Trained interviewers randomly dialled the phone numbers and attempted to reach residential households. Selection of respondents was limited to English- or Cree-speaking persons, one respondent per household, who was 18 years or older. After giving consent, the respondent was queried on numerous domains including personal quality of life, self-assessed health, assessment of community conditions, governments' role in various policy arenas, attachment to neighbourhood, and demographic characteristics. The telephone survey was conducted between December 14, 2000 and January 08, 2001 in partnership with the city's local newspaper, the StarPhoenix.

For the purposes of this project, ''location'' is operationalized as the City of Saskatoon (no heterogeneity in the operationalization of ''location''). Locale is operationalized as urban neighbourhoods. Pred's (1983) definition of ''sense of place'' was used in constructing our survey items, and is understood as the identity, significance, meaning, intention, and felt value that are given to places (both ''locale'' and ''location'') by individuals.

By design, the targeted areas of the City for subject recruitment comprised of three neighbourhood clusters. Each cluster, in turn, was comprised of three spatially contiguous neighbourhoods. The neighbourhood clusters were achieved via a K-Means cluster analysis routine (Tabachnick and Fidell 1989). Five Canada census-based (1996) aggregated variables (percent neighbourhood population that were Aboriginal, median household income, percent households that were lone parent families, percent housing that was owned, and percent of the labour force employed) were submitted to the cluster analysis routine and a three-cluster solution was specified to facilitate interpretation and design of the survey. Our objective in selecting the neighbourhood clusters was to obtain a sample that was socio-demographically representative of the City population, yet shared a spatial locality within the City that was easily identifiable and had meaning to those living within these localities. The neighbourhood clusters selected were, therefore, representative of the socio-economic (SES) continuum within the city (i.e., low, middle and high SES areas) as well as being different from each other in relation to the neighbourhood environment. In subsequent analysis reported here, we regrouped neighbourhood clusters into two types–high and low socio-economic status–in order to achieve maximum contrast in this contextual variable.

Out of 4,469 attempts to contact via phone numbers dialed randomly, including callbacks, 968 yielded positive responses in terms of participation in the survey. Following review of data for completion, validity and errors, data for 917 respondents were retained for analysis in this study.

8 Measures

8.1 Self-Rated Health and Quality of Life

The two dependent variables, self-rated health and overall quality of life, were each measured using a single, standard question. For each item the question stem read, ''In general, compared to others your age, how would you rate your overall health (quality of life)?'' The response alternatives consisted of excellent, very good, good, fair or poor. Although the responses to each item generally followed a normal distribution we were interested in modeling variables that were correlated with positive in contrast to negative responses. Therefore, in the analyses reported here, we present results based on dichotomized dependent variables, in which responses were categorized as: 1 = excellent/very good/good or 0 = fair/poor.

8.2 Individual-Related Characteristics

The individual-related characteristics comprised of the standard demographic variables—age, sex, marital status–as well as socio-economic variables—education level, employment status, and two measures of economic status, household income level and a subjective

measure in which respondents indicated their income status compared to others. The subjective measure of income status was operationalized by asking respondents the following question, ''Compared to others, how would you rate your income status?'' with respondents indicating whether they were ''well off,'' ''adequate,'' or ''poor.'' Additionally, home ownership, number of individuals living with the respondent, satisfaction with personal relationships, and number of homes lived within the past 5 years were included among the individual-level determinants of the dependent variables.

8.3 Perceived Neighbourhood-Related Characteristics

Through a series of structured questions, respondents were asked to assess various aspects of the neighbourhood they were residing in at the time of the survey. These questions included both general as well as specific aspects of their local neighbourhood. All items measuring neighbourhood-related characteristics had face validity and were pilot-tested prior to implementation. The responses to these items were submitted to a factor analysis in order to determine the underlying constructs being measured and based on these results derived scores were created to represent these constructs. Details of the items included in the factor analysis are given in Appendix A and are summarized below.

8.3.1 Neighbourliness Score

The degree to which respondents feel attached to and are engaged in the neighbourhood that they live in is captured by the derived measure, neighbourliness score. The measure comprises four items related to feeling part of the neighbourhood, participation in neighbourhood activity, feeling comfortable reaching out to neighbours for help in crises, and volunteering. Higher values in the neighbourliness score indicate a greater degree of attachment to, engagement in and comfort living in the neighbourhood.

8.3.2 Feel Safe and Secure in the Neighbourhood

A single item asked the respondents to indicate the degree to which they feel safe and secure in their neighbourhood for self and family. The response alternatives were recoded as, 1 = poor, 2 = fair, 3 = good, 4 = very good, and 5 = excellent.

8.3.3 Neighbourhood Conditions

The survey questionnaire included 20 items, each related to a specific aspect of neighbourhood. Respondents rated each condition, or service available, in the neighbourhood in a Likert-type scale from excellent to poor. The responses to these items were submitted to a factor analysis and based on the results four specific dimensions of neighbourhood conditions were defined. Higher scores indicate a higher degree of satisfaction with the particular dimension of neighbourhood conditions.

a) Perceptual: This dimension included five items related to respondents' perception of the quality of conditions in the neighbourhood (neighbourhood neatness, such as lack of litter, graffiti; friendliness; safety from violent or property crime; and neighbourhood organizations such as neighbourhood watch or associations). The internal consistency of these items was moderate to good (Cronbach's alpha 78.9%).

b) Programs and services: Five items measured the quality of programs and services available at the neighbourhood level (social programs such as counseling and child protection; health services; recreation programs; care-giver services; and protection services such as police and fire). The internal consistency of these five items was moderate to good (Cronbach's alpha 77.1%).
c) Amenities: Four items were included in measuring amenities in the neighbourhood such as shops and services, religious and spiritual activities, schools, and public transportation. The internal consistency of these items was moderate (Cronbach's alpha 68.5%).
d) Physical infrastructure: Six items measured the condition of physical infrastructure in the neighbourhood (roads and sidewalks, housing, parks, other green spaces such as boulevards, traffic, and the environment such as air and water quality). The internal consistency of these items was moderate to good (Cronbach's alpha 75.4%).

8.3.4 Satisfaction with Civic Interactions

We measured respondents' satisfaction with interactions with those who provide services in the neighbourhood in a Likert-type scale from ''very satisfied'' to ''very dissatisfied.'' Respondents indicated their level of satisfaction with their interactions with storeowners and with people in the public services domain such as police officers and city workers.

In addition to the specific aspects of neighbourhood measured above, we included in the analysis a measure that indicated overall satisfaction with the neighbourhood from the perspective of whether it is getting better, staying the same or getting worse over the previous three years. Respondents also indicated the length of residence in the neighbourhood.

8.4 Perceived City-Related Characteristics

In parallel to the questions posed to the respondents in reference to the neighbourhoods they lived in, two questions asked respondents to indicate their overall satisfaction with the city (whether it is getting better, staying the same or getting worse over the previous three years) and the length of residence in the city.

9 Analytical Method

To address our study questions, we constructed multivariable models separately for each of the two dependent variables, self-assessed health and overall quality of life. Using logistic regression we estimated models that include variables independently related to positive self-assessed health (excellent/very good/good vs. fair/poor) and positive overall quality of life (excellent/very good/good vs. fair/poor). In modeling each dependent variable, we defined three sets of independent measures, conceptualized to represent variables related to individual, perceived characteristics of neighbourhood, and city. Accordingly, in preliminary multivariable analysis we constructed three models; each model including variables measured in reference to only individual or neighbourhood or the city. Statistically significant variables from the preliminary models were then included together and final models derived that included both individual and perceived neighbourhood characteristics. It is important to note that with the exception of the contextual variable denoting neighbourhood type (which was measured using aggregate census variables as described

above), all variables used in this report were collected from individual respondents and therefore pertain to single (i.e., individual) level of measurement.

To address the second question, whether the type of neighbourhoods (social context) matter in determining the importance of the association between individual, perceived neighbourhood characteristics and self-rated health and quality of life, we constructed models separately for each of the two neighbourhood types: high and low socioeconomic status. All final models were subject to assessment of model fit using Hosmer-Lemeshow goodness-of-fit test statistic. For each variable included in the final models we have reported an estimate of association (odds ratio), the 95% confidence intervals and *p*-values.

10 Results

10.1 Sample Description and Representativeness

Tables 1 and 2 present respondents' individual characteristics and perceived neighbourhood characteristics according to the two neighbourhood types (high and low socioeconomic status). Not surprisingly, respondents drawn from the high socioeconomic status neighbourhoods showed significant differences in terms of their social and economic make-up compared to those drawn from low socioeconomic status neighbourhoods. In terms of age and sex composition, the samples from each of the two neighbourhood types were similar. In each of the key social and economic variables, such as education, employment, income, home ownership, and marital status, however, respondents from the high SES neighbourhoods showed more advantage than respondents from low SES neighbourhoods.

The distribution of the two dependent variables, self-rated health and overall quality of life, also showed significant differences by neighbourhood type. Respondents from low SES neighbourhoods were twice as likely to report their overall quality of life and health as either ''fair'' or ''poor'' compared to respondents from high SES neighbourhoods.

The differences seen among respondents from the high and low SES neighbourhoods extend to perceived neighbourhood characteristics as well. Respondents from the high SES neighbourhoods consistently had a more favourable outlook of their neighbourhoods than respondents from low SES neighbourhoods. They were almost twice as likely to report that they are very satisfied with their neighbourhoods; they are more likely to report that the neighbourhood or city quality of life has improved or stayed the same over the course of the previous three years; and they scored higher in all of the derived perceived neighbourhood indicators, thus showing greater level of attachment to the neighbourhoods and satisfaction with programs, services and amenities available in the neighbourhoods.

The differences in individual and perceived neighbourhood characteristics presented in this section are based on unadjusted bivariate associations and provide rationale for multivariable analysis. Next, we present adjusted associations between individual and perceived neighbourhood characteristics and each of the two outcomes, self-rated health and quality of life.

10.2 Individual and Perceived Place-Related Correlates of Health and Quality of Life

Table 3 presents summary results of logistic regression analysis examining the significant individual and perceived place-related correlates of positive self-rated health. As shown, three individual-related characteristics, respondents' economic circumstance compared to

Table 1 Characteristics of respondents by neighbourhood type (high/low socio-economic status), percentages

	Neighbourhood type	
	High socioeconomic status	Low socioeconomic status
Total	630 (100%)	287 (100%)
Age		
18–24	14.1	16.0
5–44	41.4	42.9
45–64	34.8	29.6
65 and up	9.7	11.5
Sex		
Male	41.1	44.3
Female	58.9	55.7
Marital status**		
Single	31.0	32.9
Married/common-law	56.5	45.2
Divorced/separated/widowed	12.5	21.9
Education level**		
Grade 9 or less	1.6	7.0
High school	18.3	37.2
Trade or technical school	16.4	22.8
Post-secondary school	63.7	33.0
Employment status**		
Employed	72.4	57.8
Unemployed	3.2	11.2
Other (retired, homemaker, student, on leave)	24.3	31.0
Gross household income level (per year)**		
$30,000 or less	22.2	44.2
$30,000–59,999	24.6	26.1
$60,000 or more	27.1	9.5
Income compared to others**		
Well-off	20.9	10.2
Adequate	70.1	63.6
Poor	9.0	26.1
Home ownership**		
Home owner	68.3	53.0
Renter	31.7	47.0
Length of residence in neighbourhood*		
2 years or less	27.2	35.8
3–9 years	34.6	32.1
10 years or more	38.2	32.1
Self-rated health status**		
Excellent	24.0	16.8
Very good	42.9	36.7
Good	24.0	28.7

Table 1 continued

	Neighbourhood type	
	High socioeconomic status	Low socioeconomic status
Fair	6.7	14.3
Poor	2.2	3.5
Self-rated quality of life**		
Excellent	24.5	16.8
Very good	44.8	31.5
Good	25.0	37.4
Fair	5.0	11.2
Poor	0.6	3.1

* $p < .01$; ** $p < .001$

others, education level and employment status, were significantly related to positive self-rated health. Of the perceived neighbourhood characteristics, the measure indicating the degree to which respondents feel part of the neighbourhood (neighbourliness), their satisfaction with neighbourhood physical structures, and feeling safe and secure in the neighbourhood were significant correlates of positive health. At the city level, respondents' perception of the degree to which quality of life in the city has changed in the previous three years was a significant correlate and therefore was retained in subsequent models.

In the final model examining positive self-rated health three individual and two perceived neighbourhood-related variables were found as significant correlates of self-rated health. Respondents who indicated that, compared to others, they were economically well-off were more than three times as likely to rate their health positively, than those who indicated that, compared to others, they were poor. Similarly, respondents who had had a post-secondary education were 3.8 times more likely to rate their health positively compared to those who had less than Grade 9 education. Indicators related to neighbourhood characteristics also showed significant associations with self-rated positive health. For instance, those who lived in neighbourhoods to which they felt a greater degree of attachment were significantly more likely to rate their health positively, with each increment of one point in the neighbourliness score being associated with 20% increase in likelihood of rating their health positively.

Table 4 presents results based on similar analyses as in the previous models, for overall quality of life as an outcome. As shown, in preliminary analysis both individual and perceived place-related variables were among those showing a significant association with positive quality of life. In the final model, four variables related to individual and two indicators related to perceived neighbourhood characteristics were significant correlates of positive quality of life. Respondents who indicated that compared to others they were either economically well-off or were adequately well-off show, respectively, eight- or four-times greater likelihood of rating their quality of life positively. Respondents who reported their marital status as married or single were significantly more likely to have positive quality of life compared to those who were divorced, separated or widowed. Those who were employed or were not in the labour force as a result of being a student, full-time homemaker, or on leave or retired, were almost three-and-half times more likely to report their quality of life as positive compared to those who were unemployed. In terms of

Table 2 Perceived neighbourhood characteristics by neighbourhood type (high/low socio-economic status), percentages

	Neighbourhood type	
	High socioeconomic status	Low socioeconomic status
Total	630 (100%)	287 (100%)
How satisfied with neighbourhood?**		
Very satisfied	70.2%	36.8%
Somewhat satisfied	26.5	37.5
Somewhat dissatisfied	2.8	17.5
Very dissatisfied	0.5	8.2
How satisfied with city?**		
Very satisfied	58.6%	50.0%
Somewhat satisfied	37.6	41.5
Somewhat dissatisfied	3.4	5.3
Very dissatisfied	0.3	3.2
Change in neighbourhood quality of life?**		
Has improved	20.7%	22.0%
Stayed the same	71.5	54.8
Has become worse	7.8	23.2
Change in city quality of life?*		
Has improved	27.3%	25.5%
Stayed the same	58.5	53.3
Has become worse	14.2	21.2
	Mean (standard deviation)	Mean (standard deviation)
Neighbourliness score*	9.07 (1.37)	8.64 (1.46)
Feel safe and secure for self and family in the neighbourhood*	3.77 (0.90)	3.07 (1.24)
Satisfaction with neighbourhood conditions: Perceptual*	16.22 (3.30)	13.49 (4.20)
Satisfaction with neighbourhood conditions: Public programs/services*	15.81 (2.87)	14.30 (3.25)
Satisfaction with neighbourhood conditions: Amenities*	12.95 (2.51)	11.67 (2.56)
Satisfaction with neighbourhood conditions: Physical infrastructure*	19.03 (3.66)	16.56 (3.78)
Satisfaction with personal relationships*	9.76 (2.27)	9.57 (2.26)
Satisfaction with civic interactions*	6.48 (1.21)	6.42 (1.27)

* $p < .01$; ** $p < .001$

Table 3 Logistic regression models showing individual and place-based (neighbourhood, city) correlates of positive self-rated health (*excellent/very good/good* compared with *fair/poor*) ($N = 917$)

	Odds ratio (95% confidence interval)	*p*-value
Model showing significant individual-related characteristics only		
Income compared to others		
Well-off	4.57 (1.96–10.67)	<.001
Adequate	2.80 (1.64–4.78)	<.001
Poor	Reference	
Age (years)		
18–24	1.67 (0.67–4.12)	.271
25–44	1.80 (0.80–4.08)	.158
45–64	.88 (0.41–1.92)	.753
65 or more	Reference	
Education level		
Less than grade 9	Reference	
High school	2.44 (0.96–6.21)	.062
Technical or vocational training	3.80 (1.40–10.33)	<.01
Post-secondary	5.04 (2.00–12.73)	<.001
Employment status		
Employed	2.69 (1.25–5.78)	<.05
Unemployed	Reference	
Other (retired, homemaker, student, on leave)	2.16 (0.94–4.98)	.071
Model showing significant neighbourhood-related characteristics only		
Neighbourliness score	1.21 (1.03–1.41)	<.05
Feel safe and secure for self and family in the neighbourhood	1.24 (0.99–1.54)	.057
Satisfaction with neighbourhood conditions: physical infrastructure	1.11 (1.04–1.19)	<.01
Model showing significant city-based characteristics only		
Change in quality of life in the city		
Improved	2.17 (1.13–4.15)	<.05
Stayed the same	1.37 (0.81–2.31)	.240
Become worse	Reference	
Final model showing all significant individual and neighbourhood-related characteristics		
Income compared to others		
Well-off	3.14 (1.30–7.54)	<.05
Adequate	2.69 (1.53–4.71)	<.05
Poor	Reference	
Age (years)		
18–24	1.90 (0.73–4.96)	.191
25–44	2.02 (0.86–4.79)	.108
45–64	.88 (0.39–1.98)	.753
65 or more	Reference	
Education level		
Less than grade 9	Reference	
High school	2.00 (0.72–5.57)	.182

Table 3 continued

	Odds ratio (95% confidence interval)	*p*-value
Technical or vocational training	2.92 (0.99–8.60)	.053
Post-secondary	3.81 (1.39–10.45)	<.01
Employment status		
Employed	2.04 (0.91–4.56)	.084
Unemployed	Reference	
Other (retired, homemaker, student, on leave)	1.65 (0.70–3.90)	.256
Neighbourliness score	1.20 (1.02–1.41)	<.05
Satisfaction with neighbourhood conditions: Physical infrastructure	1.09 (1.02–1.16)	<.05
Goodness of fit	Chi-square (degrees of freedom, 8) = 5.67, p = .684	

perceived neighbourhood characteristics, those respondents who indicated that they feel a greater sense of attachment to the neighbourhood are more likely to rate their quality of life positively. Quantitatively, each increment of one point in the neighbourliness score was associated with a 39% greater likelihood of a positive rating of quality of life. Respondents who lived in neighbourhoods where their satisfaction with available neighbourhood public services and programs was high were significantly more likely to rate their quality of life positively.

10.3 Impact of Neighbourhood Context on Individual- and Perceived Place-Related Correlates of Health and Quality of Life

Tables 5 and 6 present summary results examining the impact of neighbourhood socioeconomic context on individual and perceived place-related correlates on self-rated health and quality of life, respectively. Each Table presents two logistic regression models side-by-side: first, for high SES neighbourhoods and second, for low SES neighbourhoods.

For respondents drawn from high SES neighbourhoods, one variable related to individual characteristics (income compared to others) and three variables related to neighbourhood characteristics (neighbourliness score, feel safe and secure for self and family in the neighbourhood, and length of residence in the neighbourhood) were significant correlates of positive self-rated health, although, curiously, length of neighbourhood residence showed an inverse relationship. In a mirror image of these results, for those respondents drawn from low SES neighbourhoods, three variables related to individual characteristics (income compared to others, education level, and employment status) and only one neighbourhood-related variable (satisfaction with neighbourhood) were significant correlates of positive self-rated health. These results indicate that the socioeconomic context of the neighbourhood has a notable impact on the individual and perceived neighbourhood-level correlates of positive self-rated health.

Turning to correlates of quality of life (Table 6), we found results that were similar to self-rated health, although the contrast between high- and low-SES neighbourhoods in terms of the relative number of significant correlates at individual and neighbourhood levels was less pronounced. For respondents from high-SES neighbourhoods, two variables

Table 4 Logistic regression models showing individual and place-based (neighbourhood, city) correlates of positive self-rated quality of life (*excellent/very good/good* compared with *fair/poor*) ($N = 917$)

	Odds ratio (95% confidence interval)	*p*-value
Model showing significant individual-related characteristics only		
Annual household income		
Less than $30,000	Reference	
$30,000–59,999	2.89 (1.25–6.64)	<.05
$60,000 or more	1.41 (0.53–3.77)	.488
Not available	5.31 (1.96–14.38)	<.01
Income compared to others		
Well-off	13.55 (3.55–51.75)	<.001
Adequate	6.22 (3.38–11.46)	<.001
Poor	Reference	
Sex		
Female	1.76 (0.98–3.15)	.059
Male	Reference	
Marital status		
Single	Reference	
Married/common-law	1.64 (0.80–3.37)	.180
Divorced/separated/widowed	.51 (0.25–1.03)	.060
Employment status		
Employed	3.16 (1.32–7.55)	<.01
Unemployed	Reference	
Other (retired, homemaker, student, on leave)	4.28 (1.68–10.91)	<.01
Model showing significant neighbourhood-related characteristics only		
Neighbourliness score	1.36 (1.12–1.64)	<.01
Satisfaction with neighbourhood conditions: Public programs and services	1.28 (1.16–1.41)	<.001
Satisfaction with neighbourhood conditions: Physical infrastructure	1.10 (1.01–1.20)	<.05
Satisfaction with personal relationships	1.14 (1.02–1.29)	<.05
Model showing significant city-related characteristics only		
Change in quality of life in the city		
Improved	2.99 (1.36–6.59)	<.01
Stayed the same	2.06 (1.12–3.78)	<.05
Become worse	Reference	
Satisfaction with the city		
Very satisfied	13.81 (3.41–55.96)	<.001
Somewhat satisfied	8.65 (2.21–33.91)	<.01
Somewhat dissatisfied	2.25 (0.50–10.09)	.291
Very dissatisfied	Reference	
Final model showing all significant individual and neighbourhood-based characteristics		
Income compared to others		
Well-off	8.24 (2.24–30.30)	<.01
Adequate	4.23 (2.25–7.96)	<.001
Poor	Reference	

Table 4 continued

	Odds ratio (95% confidence interval)	*p*-value
Sex		
Male	Reference	
Female	1.93 (1.04–3.59)	<.05
Marital status		
Single	2.85 (1.35–6.01)	<.01
Married/common-law	4.01 (1.88–8.54)	<.001
Divorced/separated/widowed	Reference	
Employment status		
Employed	3.46 (1.41–8.53)	<.01
Unemployed	Reference	
Other (retired, homemaker, student, on leave)	3.47 (1.29–9.32)	<.05
Neighbourliness score	1.39 (1.13–1.70)	<.01
Satisfaction with neighbourhood conditions: Public programs and services	1.29 (1.18–.42)	<.001
Goodness of fit	Chi-square (degrees of freedom, 8)=3.77, p = .877	

related to individual characteristics (income compared to others and marital status) were important correlates of quality of life, as were sense of attachment to neighbourhood (neighbourliness score) and satisfaction with neighbourhood conditions in two domains: amenities, and available public services and programs. For respondents from low-SES neighbourhoods, two variables related to individual characteristics (income compared to others and employment status) were key correlates of positive quality of life as well. As for correlates related to neighbourhood, the degree of attachment to neighbourhood (neighbourliness score) and satisfaction with public services and programs available in the neighbourhood were significantly associated with positive quality of life.

11 Discussion

This study examined the differential effects of personal characteristics and perceived place-based (neighbourhood, city) characteristics as they influence health and quality of life in a small urban environment. First, we addressed what factors related to individuals and perceived characteristics of neighbourhood and city bear relative importance to self-assessed concepts of health and quality of life. Second, we examined whether individual variables and perceived neighbourhood characteristics that are of significance to health and quality of life differ depending on the neighbourhood context.

11.1 Individual and Perceived Place-Related Correlates of Health and Quality of Life

On the first question, we found that both individual and perceived place-related characteristics have important influence in determining health and quality of life. The significant factors related to individual characteristics are primarily economic or otherwise pertaining to social status. Those who perceive that they are better off economically compared to

Table 5 Final logistic regression models including individual and place-related (neighbourhood, city) correlates of positive self-rated health (*excellent/very good/good* compared with *fair/poor*) by neighbourhood type (high/low socio-economic status)

	High socio-economic neighbourhoods		Low socio-economic neighbourhoods	
	Odds ratio (95% confidence interval)	*p*-Value	Odds ratio (95% confidence interval)	*p*-Value
Individual-related characteristics				
Income compared to others				
Well-off	2.98 (1.07–8.30)	<.05	8.82 (1.03–75.76)	<.05
Adequate	3.32 (1.47–7.50)	<.01	1.93 (0.93–4.03)	.078
Poor	Reference		Reference	
Education Level	–*			
Less than grade 9			Reference	
High school			2.55 (0.81–7.99)	.109
Technical or vocational training			5.44 (1.44–20.52)	<.05
Post-secondary			7.25 (2.00–26.42)	<.01
Employment status	–			
Employed			3.56 (1.24–0.24)	<.05
Unemployed			Reference	
Other (retired, homemaker, student, on leave)			1.17 (0.43–3.22)	.759
Place-related characteristics (neighbourhood)				
Neighbourliness score	1.33 (1.07–1.65)	<.01	–	
Feel safe and secure for self and family in the neighbourhood	1.60 (1.15–2.21)	<.01	–	
Satisfaction with personal relationships	1.12 (0.99–1.28)	.077	–	
Length of residence in the neighbourhood	.63 (0.41–0.96)	<.05	–	
Very/somewhat satisfied with neighbourhood (vs. somewhat/ very dissatisfied)	–		2.57 (1.21–5.46)	<.05
Goodness of fit	Chi-square (degrees of freedom, 8)=4.32, p = .827		Chi-square (degrees of freedom, 8)=6.42, p = .599	

* dashes indicate that these variables were found not significant and therefore not included in the final logistic regression model.

others consistently report their health and quality of life positively. In addition, those who had post-secondary level of education were more likely to report positive health. Those who declared that their quality of life was high were married or in common-law relationships, female, or were employed or not otherwise in the labour force (retired, homemaker, student). In terms of perceived neighbourhood characteristics, a consistently significant relationship was seen between a sense of attachment to and involvement in the neighbourhood and positive health and quality of life. In addition, those who report that the condition of the physical structures or quality of public services in the neighbourhoods that they live in were high tend to report positive health and quality of life, respectively.

Among the individual level correlates, the significant associations found between socioeconomic indicators such as education level, employment status and each of the

Table 6 Final logistic regression models including individual and place-related (neighbourhood and city) correlates of positive self-rated quality of life (*excellent/very good/good* compared with *fair/poor*) by neighbourhood type (high/low socio-economic status)

	High socio-economic neighbourhoods		Low socio-economic neighbourhoods	
	Odds ratio (95% confidence interval)	*p*-Value	Odds ratio (95% confidence interval)	*p*-Value
Individual-related characteristics				
Income compared to others				
Well-off	10.73 (2.05–56.18)	<.01	5.83 (0.68–50.11)	.108
Adequate	5.23 (2.10–13.02)	<.001	5.19 (2.15–12.51)	<.001
Poor	Reference		Reference	
Employment Status	–*			
Employed			4.43 (1.49–13.13)	<.01
Unemployed			Reference	
Other (retired, homemaker, student, on leave)			3.24 (0.99 –10.56)	.05
Marital status			–	
Single	3.33 (1.17–9.54)	<.05		
Married/common-law	5.22 (1.83–14.92)	<.01		
Divorced/separated/widowed	Reference			
Place-related characteristics (neighbourhood)				
Neighbourliness score	1.37 (1.04–1.81)	<.05	1.45 (1.08–1.95)	<.05
Satisfaction with neighbourhood conditions: Amenities	1.21 (1.02–1.43)	<.05	–	
Satisfaction with neighbourhood conditions: Public programs and services	1.21 (1.04–1.41)	<.05	1.20 (1.04–1.37)	<.01
Satisfaction with civic interactions	–		1.32 (0.95–1.81)	.095
Goodness of fit	Chi-square (degrees of freedom, 8)=6.43, $p = .598$		Chi-square (degrees of freedom, 8)=10.99, $p = .202$	

* dashes indicate that these variables were found not significant and therefore not included in the final logistic regression model.

health and quality of life dependent measures were not surprising. Scores of previous studies have found similar associations, and those who have more education and/or were employed are more likely to have higher psychosocial control, engage less in health-risk behaviour, and report a generally healthy outlook on life. The positive impact of education and employment on health similarly has been consistent over different measures of health status and quality of life, whether these measures had been operationalized in a relatively straightforward manner or using complex multi-item scales. However, the highly significant association between a subjective measure of relative income status and health and quality of life stand apart from other significant individual level correlates. This is because fewer studies have previously reported this particular finding and, moreover, in this study, the subjective measure of income status remained a significant correlate over the standard measure of household income level reported by individuals. This suggests that a sense of social ordering is salient for individual's health and quality of life, and that this is independent of standard measures of income, education or employment status.

While the relationship between household income level and health is strong and well-established, very little research has examined the relationship between subjective assessment of income status and health or quality of life. In interpreting the observed relationship between income level and health many researchers note the gradient relationship and often invoke the social hierarchy explanation for the relationship (Evans et al. 1994). This explanation rests on the premise that society is deeply stratified along many characteristics (income being one of the more salient ones) and that many of the determinants of health (for example, housing, social support, behaviours) closely follow these stratifications. Furthermore, it is generally assumed that individuals who are immersed in society are sensitive to these stratifications and somehow are able to respond to it. In much of the previous work these assumptions have not been explicitly tested and have been taken as a given. Our findings indicate the saliency–and the primacy in relation to the household income level measure—of the subjective evaluation of income status in comparison to others, to both health and quality of life.

Turning to the perceived indicators of neighbourhood, the finding that a stronger sense of attachment to and active participation in the neighbourhood (which we termed, *neighbourliness*) has positive effects on both self-rated health and quality of life is not surprising. The importance of feeling a sense of attachment to the local community one lives in and the level of community participation and organization by residents have been shown to have strong impact on health and quality of life outcomes of residents (Kearns et al. 2000; Docherty et al. 2001).

In taking measure of the importance of this finding, it appears that in a world with increasing opportunities to form social networks and engage in interactions that are not just city-wide but international and increasingly virtual, the attachment one feels to the local neighbourhood and the degree of participation in it appears to matter in terms of health and quality of life outcomes. As Forrest and Kearns (2001) write, even though intuitively it would seem that as a source of social identity the neighbourhood's role is being eroded with globalization, the very processes of globalization may in fact have the opposite effect. As the pressures that bear down on us seem to be increasingly remote, local social interaction or familiar landmarks in the neighbourhood may take on greater significance as sources of well-being and comfort.

Another important finding is that the correlates of self-rated health and overall quality of life differ notably. This finding reinforces the theoretical arguments that the two constructs, while highly interrelated, nonetheless embody different meanings for individuals. The impact of comparative income status, for example, is almost twice as great for quality of life then for self-rated health. While being a significant correlate of self-rated health (no surprise there), education level has no effect on overall quality of life. Employment status is correlated with both, but more substantially with quality of life. Curiously, marital status shows no relation to health but does to quality of life. Neighbourhood conditions have some correlation with both self-rated health and quality of life, but more so for the latter (Table 6). Finally, while there were no gender differences in self-rated health (contrary to what many other studies report), women were almost twice as likely as men to report better quality of life.

11.2 Impact of Neighbourhood Context on Individual- and Perceived Place-Related Correlates of Health and Quality of Life

With regard to the second question, the results indicate that the socioeconomic context of the neighbourhood has a notable impact on the individual and perceived neighbourhood-level

correlates of positive self-rated health. For residents in low SES neighbourhoods the key correlates of self-rated health appear to be individual-level socioeconomic variables, such as subjective income status, education level and employment status, and to a relatively lesser extent perceived neighbourhood characteristics. For residents from high SES neighbourhoods, the scenario seems somewhat opposite; that is, the salient correlates of self-rated health include relatively more indicators pertaining to perceived neighbourhood quality (i.e., feel safe and secure for self and family in the neighbourhood, length of residence in the neighbourhood) and sense of attachment to it. Interestingly, for respondents from high SES neighbourhoods, the length of residence in the neighbourhood appears to have an inverse relationship with positive self-rated health, with those residing longer in the neighbourhood being more likely to report negative self-rated health.

This pattern of results suggests that there are different significant individual and neighbourhood-related correlates of health depending on the broader socioeconomic context in which one lives. It offers evidence that different mechanisms may be at play linking individual and neighbourhood characteristics with health at different levels of the SES hierarchy. As our results show, for those who live in socio-economically disadvantaged circumstances, factors related to increasing an individual's economic resources (such as education and employment) appear to be more important to positive self-rated health than factors related to neighbourhood. For people living in high socioeconomic areas, where one might presume a degree of material security if not affluence, factors related to neighbourhood appear to supercede in importance to factors related to individual such as whether they are employed and has attained higher levels of education.

The importance of subjective evaluation of income status between the residents from the two neighbourhoods also offers up clues that support the explanation that different underlying mechanisms may be at play between individual/neighbourhood characteristics and health. For those from low SES neighbourhoods a positive comparison drawn between them and others in terms of income status (i.e., ''well off'' as opposed to ''poor'') showed a stronger relationship to self-rated health (odds ratio 8.82) than was found for residents from high SES neighbourhoods (odds ratio 2.98). Clearly, subjective income status not only has a significant but also a stronger effect on health for residents from low SES neighbourhoods than for those from high SES neighbourhoods.

These differences in magnitude of subjective income status effects on health between residents of the two types of neighbourhoods in part raise the interesting question of how individuals assess their income status. When respondents are queried as to how they would assess their income level relative to others, we are not certain of the cognitive processes that lead to a given response. For example, whether respondents compare themselves with their neighbours in the local vicinity, across town or with an abstract standard (such as all Canadians) is not known. It is conceivable that individuals residing in low versus high SES neighbourhoods would use different standards for comparison, as would those who live within these neighbourhoods. It is also possible that a number of other psychological constructs may underlie the subjective evaluation of income status (for example, self esteem, and powerlessness) and in turn influence self-rated health. Future work should be directed to understanding better these processes of self-assessment and relationships.

Turning to correlates of quality of life, the results indicate that the socioeconomic context of the neighbourhood does not have a notable impact on the individual and perceived neighbourhood-level correlates of positive quality of life. While there were a few differences in the specific correlates related to quality of life, an equal number of significant individual and perceived neighbourhood-related correlates were found for residents in

each of the two types of neighbourhoods. As with self-rated health, subjective income status was a significant correlate of quality of life. In addition, for those from low SES neighbourhoods, employment status was a significant correlate of quality of life, whereas for residents from high SES neighbourhoods, marital status was significant. The significant correlates of quality of life related to perceived neighbourhood characteristics were satisfaction with available amenities, public services or programs and a sense of attachment to and participation in neighbourhood activities. There was little difference in the magnitude of effects or the number of significant perceived neighbourhood-level correlates between residents from high- or low-SES neighbourhoods. In contrast with the findings related to self-rated health, and with one exception, there was no clear evidence that the neighbourhood type had an impact on the significant individual- and neighbourhood-level correlates of quality of life. This finding reinforces the point made earlier: That self-rated health and quality of life have different correlates, the former being more associated with individual (compositional) characteristics under low SES circumstances and to neighbourhood (contextual) characteristics under high SES circumstances; while the latter is associated more with neighbourhood (contextual) characteristics under both SES circumstances.

There are a number of cautions related to interpretation and design in the current research. One concern, as mentioned above, is the possible conceptual overlap between subjective income status and our dependent variables, self-rated health and quality of life. It is possible that an unmeasured psychological construct underlies subjective assessments of both income status and health/quality of life, thereby resulting in the associations we observed between these variables. Related to this concern, a more objective measure of ill-health, such as physician diagnosed chronic diseases or disability or a scale-based measure of quality of life such as SF-36, would have strengthened the claims for independence of the dependent variables in the current research. However, based on previous studies that have included a range of dependent health status measures (Ellaway et al. 2001), we are reasonably confident that a subjective measure such as self-assessed health captures a concept that is not equal to such measures as self-reported symptoms, presence of long-standing illness or standardized measure of mental health, and therefore serves a purpose that is unique and non-interchangeable with other less subjective measures. Furthermore, we approached the conceptualization of our dependent measures recognizing that both self-rated health and quality of life represent multi-dimensional constructs and, departing from most of the existing evidence, we were interested in studying the positive dimension of health and quality of life constructs rather than their negative dimension.

The application of an appropriate definition of context that has saliency for individuals is another challenge faced in research wishing to take into account effects of contextual and compositional factors on health. For some people, the perceptions of importance of neighbourhood factors may not be as influential in determining health or quality of life outcomes as it does in being a member of a peer group, certain type of families, other social groups or communities that may not necessarily even be bounded by geography. In other words, the relevant context, or *locale*, for some people as it affects health or quality of life may not be the neighbourhoods that they live in but rather some other entity, such as their workplace or family or organizational memberships. It is possible that high levels of satisfaction with family or workplace may mitigate any negative impacts on self-rated health or quality of life associated with low levels of satisfaction with one's neighbourhood, and *vice versa*. This is a question to which we intend to turn our next set of analyses. In this paper we present more generally the question of whether one's neighbourhood locale makes a difference to one's perceived health or quality of life.

The difficulty in adequately measuring processes that involve multiple, layered and overlapping levels of geographies and social hierarchies is another challenge we faced in this research. As mentioned earlier, we had conceptualized neighbourhoods as our locales, and the City of Saskatoon, as our location. While our measures of individual characteristics and those taken in relation to neighbourhoods and the City had adequate variability, there was no variability in the operationalization of location. By design, we were not able to measure or test processes working at the City-level that would differentially influence neighbourhoods and the health of individuals. The lack of heterogeneity at the City level, beyond neighbourhoods, in this study could certainly be considered a limitation; but it also provided a degree of simplicity to our conceptual design and consequently the ease of interpretation.

What implications might we draw from the results of this study to the public policy arena and planning? First, in the broadest sense, the recognition that where people live is crucial to people's health, as this study has demonstrated, supports the recent efforts in western countries to renew and reinvigorate urban life and strengthen cities' infrastructure, social structures, and policy making powers. While the specific approaches taken in these urban regeneration efforts have varied across and within countries, a common goal has been to increase people's sense of attachment to and identification with the urban environment they reside in through policy, program and social marketing efforts. Clearly these efforts need to be strengthened, and supported by multiple levels of government.

Second, these generalized efforts to strengthen the attachment of urban residents to where they live needs to be augmented by specific strategies focused at specific neighbourhoods, preferably taking into consideration their socio-economic make up. As the results of our study would imply, policies and programs directed at increasing sustained economic activity and opportunity in disadvantaged areas would be an effective strategy in enhancing health amongst the residents in these areas. Concomitantly, efforts to organize neighbourhood events or otherwise entrenching people in local activities, and thereby strengthening and widening their support networks would bring greater benefits for those who live in low SES areas.

In sum, this study highlights one of the complexities of the present age. Just as modern communications technology makes it possible to connect with people from any corner of the world, so humanity clusters more into cities than ever before. Location, which should surely be irrelevant, seems to matter more, not less. Physical proximity and sense of place appear to have virtues in life that no amount of technology can replace.

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Appendix

Appendix A: Definitions of perceived neighbourhood characteristics used

Variable	Description
Neighbourliness score	Score derived through factor analysis of four items: • *How much do you feel part of your neighbourhood?* • *If there was a neighbourhood project organized, such as a block party or yare sale, how comfortable would you feel about participating?* • *Do you feel comfortable calling upon your neighbours for assistance or help during a crisis?* • *Have you volunteered in any organizations or associations such as school groups, church groups, community centres or ethnic associations in the last 3 years?* Cronbach's alpha measuring internal consistency = 57.6%
Feel safe and secure for self and family in the neighbourhood	Single item, values range from 1 = poor to 5 = excellent • *How would you describe your feelings of safety and security in your neighbourhood for you and family?*
Satisfaction with neighbourhood conditions: Perceptual	Score derived through factor analysis comprising five items: Rate each of the following neighbourhood conditions as either excellent, very good, good, fair or poor. • *Degree of neighbourhood neatness (such as amount of litter or graffiti)* • *Friendliness* • *Safety from violent crime* • *Safety from property crime* • *Neighbourhood organizations (such as neighbourhood watch or neighbourhood associations)* Cronbach's alpha = 78.9%
Satisfaction with neighbourhood conditions: Public programs/services	Score derived through factor analysis comprising five items: Rate each of the following neighbourhood conditions as either excellent, very good, good, fair or poor. • *Social programs (such as counselling and child protection)* • *Health services* • *Recreation programs and services* • *Care-giver services* • *Protection services (such as police and fire)* Cronbach's alpha = 77.1%
Satisfaction with neighbourhood conditions: Amenities	Score derived through factor analysis comprising four items: Rate each of the following neighbourhood conditions as either excellent, very good, good, fair or poor. • *Shops and services* • *Public transportation* • *Religious and spiritual activities* • *Schools* Cronbach's alpha = 68.5%

continued

Variable	Description
Satisfaction with neighbourhood conditions: Physical infrastructure	Score derived through factor analysis comprising six items: *Rate each of the following neighbourhood conditions as either excellent, very good, good, fair or poor.* • *The condition of roads* • *The condition of housing* • *The condition of parks* • *The condition of other green space (such as boulevards or medians)* • *Traffic conditions* • *Environment (such as air and water quality)* Cronbach's alpha = 75.4%
Satisfaction with personal relationships	Score derived through factor analysis comprising three items: *How do you feel about each of the following. Please tell me if you are very satisfied, somewhat satisfied, somewhat dissatisfied, or very dissatisfied.* • *Your friends* • *Your relationship with your spouse or partner* • *Your relationship with the rest of your family living with you* Cronbach's alpha = 64.7%
Satisfaction with civic interactions	Score derived through factor analysis comprising three items: *How do you feel about each of the following. Please tell me if you are very satisfied, somewhat satisfied, somewhat dissatisfied, or very dissatisfied.* • *Your treatment by people who work for government, such as police or city services* • *Your treatment by store owners* Cronbach's alpha = 50.5%

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