Staying connected: neighbourhood correlates of social participation among older adults living in an urban environment in Montréal, Québec

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SUMMARY

Alongside community involvement, promoting social participation has been identified as a key strategy of fostering empowerment, one of the central tenets of the health promotion movement. Engagement in social and productive activities appears to be particularly beneficial to older adults, as it has been found to be associated with positive outcomes on a variety of health indicators. It is therefore critical to identify factors that might lead to greater social participation within these age groups. The objective of this study was to investigate the relationship between perceptions of neighbourhood user-friendliness and social participation while controlling for personal characteristics in a sample of seniors living in an urban environment. A convenience sample of older adults (n = 282) was recruited through community organizations located in high-, average- and low-income Montreal neighbourhoods. Data were collected via an interviewer-administered questionnaire assessing social participation and various variables at the neighbourhood level (e.g. housing and social environment, walking environment and transportation, and services and amenities) and at the individual-level (e.g. health status and socio-demographic characteristics). Five variables emerged as independent predictors of social participation. Positive predictors retained in the final regression model included frequent walking episodes (almost every day), higher Vitality and General Health SF-12v2 scores, and perceived accessibility to key resources for older adults. Also included was a negative predictor: age ($R^2$ of the final model = 0.28).

Implications of the findings for research and action pertaining to ecological, health promotion interventions for older adults are identified.

Key words: neighbourhood; social participation; older adults

Over the past 20 years, the concept of social participation has raised significant interest among researchers and interventionists. Alongside community involvement, promoting social participation has been identified as a key strategy of fostering empowerment, one of the central tenets of the health promotion movement (World Health Organization, 1984; Rootman et al., 2001). In their study on the ‘epidemiology of participation’, Baum et al. (Baum et al., 2000) conveyed the gist of this idea by stating that ‘…empowerment is
determined in part by the extent to which people participate in activities outside their immediate home and work settings that is in the domain of civil society.’(p.415). Social participation and social engagement have also been identified as central dimensions of current definitions of social capital. Indeed, an examination of theoretical and methodological work on social capital reveals that in addition to interpersonal trust and norms of reciprocity, social engagement as well as social and community participation are central features of social relationships and organizations commonly referred to as social capital (Putnam, 1995; Kawachi, 1999). Accordingly, elements such as social involvement, organizational membership, social participation and civic engagement have been included in scales assessing social capital (Burdine et al., 1999; Kawachi et al., 2004).

Though less supportive results have been published recently (Ellaway and Macintyre, 2007; Hsu, 2007), studies conducted among older adult populations have consistently shown that engagement in social and productive activities is associated with positive outcomes on a variety of health indicators, including mortality (Bassuk et al., 1999; Glass et al., 1999), disability (Bassuk et al., 1999; Mendes de Leon et al., 2003), depression (Pollak and von dem Knesebeck, 2004; Glass et al., 2006), dementia (Fabrigoule et al., 1995; Wang et al., 2002), cognitive performance (Bassuk et al., 1999; Beland et al., 2005), self-rated health (Pollak and von dem Knesebeck, 2004) and health-related behaviours (Lindström et al., 2001).

Given the multiple benefits associated with social participation, it is critical from a public health standpoint to identify factors that might lead to greater social participation. In this respect, a wealth of data shows that sociodemographic characteristics predict levels and types of social participation. In Baum et al.’s study (Baum et al., 2000), older respondents (over 60 years) exhibited a distinct participation profile in comparison to their younger counterparts as they were more likely to attend church and social/services clubs, to belong to a volunteer group, and to visit their neighbours. Other studies (Bukov et al., 2002; Pollak and von dem Knesebeck, 2004; Bowling and Stafford, 2007) conducted among older adults exclusively, showed that the social participation decreases with age. There is evidence of associations with socioeconomic indicators such as level of education, home ownership, occupation-based social class and housing satisfaction in samples of older adults (Pollak and von dem Knesebeck, 2004; Bowling and Stafford, 2007). As well, racial and ethnic characteristics might have an influence on levels of participation. Using data from the Chicago Health and Aging Project, Barnes et al. (Barnes et al., 2004) found lower levels of social engagement among Black participants than among White participants. Lindström (Lindström, 2005) observed lower levels of participation for men and women born in other countries when compared with the reference population born in Sweden. Sparse data are available regarding the impact of gender, marital status and occupational status during the active life. Bukov et al.’s longitudinal study of very elderly seniors revealed a distinct profile of participation for men, who appeared to be more often involved in political activity than women. No significant relationships were observed in this study for marital status and employment duration.

A second category of factors, namely health and social resources, also emerges as influencing levels of social participation within older age groups. Better health and functional status (Lefrançois et al., 1998; Adamson et al., 2004; Bowling and Stafford, 2007) as well as greater social resources such as the availability of emotional support and social contacts (Pollak and von dem Knesebeck, 2004) are associated with higher levels of social participation. Overall, the available data are highly consistent with Bukov et al.’s hypothesis that greater individual resources are associated with greater social participation.

Although there is a wealth of data on personal and interpersonal correlates of social participation, very few studies has investigated the possible role of resources available in the community environment. Two studies supported the influence of neighbourhood context on the degree to which adults are involved in their neighbourhoods and with each other. Qualitative results (Baum and Palmer, 2002) revealed a facilitating role for environments that are favourably perceived by residents and that have considerable ‘opportunity structures’ (MacIntyre and Ellaway, 2003). Indeed, it seems that the presence or provision of amenities, pubs, sports grounds, etc. facilitates social interaction. In contrast, proximity to major roads, the presence of graffiti, crime and lack of opportunity structures, all deter
people from getting involved with others in their residential area. Looking more specifically at the influence of neighbourhood designs on different measures of social capital including political participation and social engagement, Leyden (Leyden, 2003) concluded that mixed-use, pedestrian-oriented neighbourhoods (e.g. where restaurants, pharmacies and other facilities are a short walk away) are better generators of social capital than modern, car-dependent suburbs.

So far, only one study has investigated the role of community dimensions on social participation among older adults. Using objective and subjective assessments of neighbourhood in a cross-sectional population survey, Bowling and Stafford (Bowling and Stafford, 2007) observed that respondents perceiving their area to be less neighbourly and assessing their local facilities to be poor were more likely to have low social activity. Such a relationship was also identified for neighbourhood affluence (as measured by an index of area socio-economic characteristics), but the association was weaker than for the subjective measures. As acknowledged by the authors, however, one limitation of this study pertained to the definition of the local area provided to the respondents (‘within about a 15 or 20 minute walk or drive from your home’). Although this formulation is certainly relevant in remote and rural areas, it might cover a vicinity larger than what is typically conceived as a neighbourhood in a densely populated urban area. Research is needed to investigate how various neighbourhood dimensions can either promote or impede the social participation of seniors in such urban contexts. In an effort to fill this research gap, the objective of this study was to investigate the relationship between perceptions of neighbourhood user-friendliness and social participation while controlling for personal characteristics in a sample of seniors living in an urban environment.

METHODS

Participants

This study took place in Montreal, Quebec. Local community health centre territories in Montreal were categorized into tertiles according to the proportion of adult residents living below the poverty line. Recruitment was aimed at enrolling a convenience sample of 100 participants per tertile stratum. Potential participants were recruited through community organizations involved in policy and services for older adults. The number of collaborating organizations varied in each tertile (respectively, 17, 7 and 4 in low, average and high-income territories), reflecting the greater difficulty of recruiting participants in less affluent areas. In each organization, publicity was conducted through different channels, including posters, announcements and word of mouth. The call for respondents highlighted a survey on seniors’ needs and neighbourhood living conditions with housing, transportation, proximity services and health as specific research themes. Criteria for inclusion included being aged 58 years or older and having a functional knowledge of French. Of the 363 individuals who expressed an interest in participating, 29 could not be reached, and 52 did not follow through with their intention to participate (cooperation rate = 77.7%). The final sample included 282 respondents (75, 113 and 94 from low, average and high-income neighbourhoods, respectively).

Procedure and measures

Data were collected by means of a structured questionnaire administered in participants’ homes by trained interviewers. The mean interview time was 65 min (minimum: 35, maximum: 152). In addition to social participation and health and social characteristics, the questionnaire included questions assessing perceptions of three dimensions of the user-friendliness of the respondent’s neighbourhood: housing and social environment, walking environment and transportation services, and neighbourhood services and amenities.

Social participation

Social participation was evaluated using a 10-item scale adapted from the social portion of the ‘Elderly Activity Inventory Questionnaire’ (MAS) (Lefranc¸ois et al., 2001) and Statistics Canada’s Participation and Activity Limitation Survey (www.statcan.ca/english/sdds/instrument/3251_Q2_V1_E.pdf). The instrument assesses the involvement of respondents in activities such as attending cultural events, taking lessons, or volunteering (a complete list appears in the results section below). Response options for each item included ‘almost every day’, ‘at least once a week’, ‘at least once a month’, ‘less than
once a month' and 'never'. Categories were converted into number of days per month ('almost every day': 20, ‘at least once a week’: 6, ‘at least once a month’: 2, ‘less than once a month’: 1 and ‘never’: 0). Internal consistency of the scale, established through application of item-response theory, was high at 0.91. The numbers of days per month for each item were summed and the resulting overall score was square root transformed to improve normality for subsequent regression analyses.

Health and socio-demographic characteristics
Questions pertained to health as assessed by the SF-12v2 general health and vitality subscales (www.qualitymetrics.com/products/surveys/SF12v2.shtml) as well as by items assessing vision and hearing problems (yes/no). Socio-demographic characteristics were assessed by a series of questions related to age, gender, education (recoded 7 years or less, between 8 and 12 years, 13 years or more), marital status (recoded married/living common-law vs. single/separated/divorced/widowed), the receipt of a guaranteed income supplement or welfare benefit (yes/no) and number of years of tenure in dwelling and in neighbourhood (less than 1 year, 1–4, 5–9, 10–19, 20–29, 30–39, 40+).

Housing and social environment
Respondents rated their level of satisfaction with their dwelling (recoded very satisfied vs. somewhat satisfied/somewhat dissatisfied/very dissatisfied because of the asymmetrical distribution) and perceived safety of their dwelling (recoded very safe vs. quite safe/not very safe/not safe at all). Housing health liabilities were assessed by an index adding the number of problems reported relative to: (i) condensation on windows, (ii) mould, (iii) persistent odour of mould or mildew, (iv) odours of gas or chemical products, (v) presence of insects or rodents, (vi) presence of at least one window per room, (vii) sufficiency of natural light, (viii) sufficiency of fresh air, (ix) comfortable room temperature, (x) presence of disturbing noise and (xi) presence of noise detrimental to sleep. Total scores were divided into tertiles. Housing amenities were assessed using an index constituted from the summation of the number of items in the following list: (i) balcony in good state and presence of an access ramp, (ii) access to a backyard or a garden, (iii) at least one air-conditioned room, (iv) a hand-held shower head, (v) one telephone in every main room and (vi) washing machines in dwelling/building. Total scores were again divided into tertiles.

Walking environment and transportation services
Questions investigated perceptions of the user-friendliness of the walking environment, i.e. how easy or difficult is it to get around on foot in the neighbourhood (response scales recoded very/somewhat easy vs. somewhat/very difficult); frequency of walking episodes (response scores recoded almost every day vs. less than every day); frequency of transit use (response scores recoded at least once a week vs. less than once a week), availability of a subway station or a bus stop located within a 5-min walk of the respondent’s residence [yes/no; index built from response to a question assessing walking distance (in minutes) between the respondent’s residence and the nearest metro station/bus stop], availability of a motor vehicle in the household, availability of a driver’s license.

Neighbourhood services and amenities were assessed by two scales
Perceived Accessibility to Key Resources for Older Adults was composed of eight items assessing the ease/difficulty of accessing resources in the neighbourhood: (i) good quality, affordable food, (ii) a good range of businesses and services (pharmacy, etc.), (iii) leisure activities of interest, (iv) facilities to engage in preferred physical activities or sports, (v) pleasant and welcoming restaurants or cafés, (vi) a library or a cultural centre, (vii) a place of worship commensurate with religious beliefs and (viii) organizations and services specifically devoted to older adults (reliability coefficient: 0.70). Response scale format was very/somewhat easy to somewhat/very difficult. Proportion of services/amenities
located within a 5-min walk of the respondent’s residence was derived from a series of items assessing walking distance (in minutes) between the respondent’s residence and the nearest grocery/food store, convenience/corner store, bank, pharmacy, community/leisure centre, sports centres, restaurant/bistro/café, library/cultural centre, store/shopping centre, church/place of worship, CLSC/medical clinic and park (reliability coefficient: 0.94).

Analysis
First, descriptive analyses were performed to highlight respondents’ profiles with regard to the study variables. A second step involved examination of bivariate relationships between personal and neighbourhood perception variables on the one hand, and the level of social participation on the other. A multicollinearity analysis was performed to eliminate correlated predictors ($p > 0.40$). Variables whose bivariate test results had a $p$-value lower than 0.25 were retained for blockwise multiple regression analysis and entered into one of the following four blocks: (i) health and socio-demographic characteristics, (ii) housing and social environment, (iii) walking environment and transportation services and (iv) neighbourhood services and amenities.

Ethical considerations
The Research Ethics Committee of the Montreal Public Health Department approved the project and participants signed an informed consent form approved by the ethics committee.

RESULTS
Respondent characteristics
As shown in Table 1, the mean age of respondents was 71.5 years (range: 58–92). Nearly, three-quarters of participants were women. The majority lived independently with most of them (73.0%) being either married, living common-law or widowed. A little more than one quarter reported 7 years of education or less and 38.7% declared receiving an income supplement and/or welfare benefits. Nearly half of the sample (45.2%) perceived their health status as excellent or very good.

<table>
<thead>
<tr>
<th>Characteristics</th>
<th>n (%)</th>
<th>Mean</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td>–</td>
<td>71.5</td>
<td>8.1</td>
</tr>
<tr>
<td>Gender</td>
<td></td>
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<tr>
<td>Female</td>
<td>208 (73.8)</td>
<td></td>
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<tr>
<td>Male</td>
<td>74 (26.2)</td>
<td></td>
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<tr>
<td>Marital status</td>
<td></td>
<td></td>
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<tr>
<td>Married/common-law</td>
<td>90 (31.9)</td>
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<tr>
<td>Single (never married)</td>
<td>26 (9.2)</td>
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<tr>
<td>Divorced/separated</td>
<td>50 (17.7)</td>
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<tr>
<td>Widowed</td>
<td>116 (41.1)</td>
<td></td>
<td></td>
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<tr>
<td>Education</td>
<td></td>
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<tr>
<td>7 years or less</td>
<td>78 (27.9)</td>
<td></td>
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<tr>
<td>8–12 years</td>
<td>119 (42.5)</td>
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<tr>
<td>13 years or more</td>
<td>83 (29.6)</td>
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<tr>
<td>Guaranteed income supplement or welfare benefit</td>
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<td></td>
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<tr>
<td>No</td>
<td>171 (61.3)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>109 (38.7)</td>
<td></td>
<td></td>
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<tr>
<td>Living arrangement</td>
<td></td>
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<tr>
<td>Living alone</td>
<td>177 (62.8)</td>
<td></td>
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<tr>
<td>Living with others</td>
<td>105 (37.2)</td>
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<tr>
<td>Self-reported health status</td>
<td></td>
<td></td>
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<tr>
<td>Excellent</td>
<td>56 (19.9)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Very good</td>
<td>71 (25.3)</td>
<td></td>
<td></td>
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<tr>
<td>Good</td>
<td>94 (33.5)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Passable</td>
<td>45 (16.0)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Poor</td>
<td>15 (5.3)</td>
<td></td>
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</table>

Social participation
Table 2 shows frequency distributions for each item of the social participation scale. Attending activities at a community/leisure centre, visiting family members/friends and practicing a hobby outside of the home emerged as those activities most frequently engaged in by respondents. More than half of respondents declared never taking courses, participating in discussion/self-help groups, or going to a public library or a cultural centre. Following transformation of raw scores into days per month of social participation (see above), the averaged social participation score was 31.77 activity-days per month (SD = 20.77; min = 0.00, max = 116).

Correlates of social participation
As shown in Table 3, many variables were significantly associated with social participation ($p < 0.05$).

Health and socio-demographic variables
Strong positive correlations were observed between the two SF-12v2 subscales on one hand, and social participation on the other ($r = 0.41$ and 0.42 for general health and vitality,
respectively). A lower level of participation was observed among participants who declared vision problems, women and respondents receiving an income supplement or welfare benefits. Results showed an educational gradient with progressively higher levels of education associated with increasingly higher levels of social participation. A moderate negative correlation was observed for the age variable.

**Housing and social environment variables**

Significantly higher levels of social participation were observed for respondents who were very satisfied with their dwelling, expressed a strong sense of belonging to their neighbourhood and felt strongly that theirs was an appropriate neighbourhood setting for a senior’s lifestyle. Significant differences were observed as a function of the level of proximity to the social network: lower social participation scores were observed for those respondents who declared living alone.

**Walking environment and transportation services variables**

Levels of social participation were significantly higher for respondents declaring frequent walking episodes (almost every day), frequent users of public transit (at least once a week), respondents with positive perceptions of the user-friendliness of the walking environment, those with a driver’s license, and those who had a motor vehicle in the household.

**Neighbourhood services and amenities variables**

The two variables investigated, perceived accessibility to key resources for older adults and the proportion of services/amenities located within a 5-min walk of the respondent’s residence, were positively correlated to the level of social participation, with correlations of $r = 0.31$ and $r = 0.19$, respectively.

As shown in Table 4, five variables emerged as predictors of social participation. Positive predictors retained in the final model included frequent walking episodes (almost every day), higher Vitality and General Health SF-12v2 scores and perceived accessibility to key resources for older adults. Age emerged as being negatively associated.

**DISCUSSION**

Theoretical and empirical work has supported the positive impact of social participation on a variety of health outcomes among the older adult population. In order to develop relevant and effective health promotion interventions to sustain social participation, it is now crucial to identify its determinants. The present study contributed to this end by describing the extent of social participation among a sample of older adults and by shedding light on its correlates, with a particular focus on perceptions of neighbourhood user-friendliness.
### Table 3: Bivariate associations between social participation and neighbourhood- and individual-level correlates

<table>
<thead>
<tr>
<th>Correlates</th>
<th>$R$</th>
<th>Mean level of social participation</th>
<th>$p$-Value</th>
</tr>
</thead>
</table>

**Health and socio-demographic characteristics**

- **Age** $R = -0.26$<br>  Mean level of social participation: 5.90 <br>  $p$-Value: <0.01
- **Gender**
  - Male ($n = 74$) 5.26 <br>  $p$-Value: <0.01
  - Female ($n = 208$) 5.26
- **SF-12v2 General Health** $R = 0.41$<br>  Mean level of social participation: 5.08 <br>  $p$-Value: <0.01
- **SF-12v2 Vitality** $R = 0.42$<br>  Mean level of social participation: 5.08 <br>  $p$-Value: <0.01

**Guaranteed income supplement/welfare benefit**

- Yes ($n = 108$) 5.08 <br>  $p$-Value: <0.01
- No ($n = 171$) 5.66

**Marital status**

- Married/common-law ($n = 90$) 5.53 <br>  $p$-Value: 0.53
- Single/divorced/separated/widowed ($n = 192$) 5.38

**Education**

- 0–7 years ($n = 78$) 4.74<sup>a</sup> <br>  $p$-Value: <0.01
- 8–12 years ($n = 119$) 5.47<sup>b</sup> <br>  $p$-Value: <0.01
- 13+ years ($n = 85$) 5.98<sup>c</sup>

**Number of years of residence**

- In dwelling $R = -0.05$<br>  Mean level of social participation: 4.91 <br>  $p$-Value: 0.43
- In neighbourhood $R = 0.05$<br>  Mean level of social participation: 5.58 <br>  $p$-Value: <0.01

**Vision problems**

- Yes ($n = 66$) 4.91 <br>  $p$-Value: <0.01
- No ($n = 216$) 5.58

**Hearing problems**

- Yes ($n = 92$) 5.17 <br>  $p$-Value: 0.10
- No ($n = 190$) 5.55

**Housing and social environment**

**Satisfaction towards dwelling**

- Very satisfied ($n = 185$) 5.62 <br>  $p$-Value: <0.05
- Somewhat satisfied/somewhat/very dissatisfied ($n = 97$) 5.05

**Perceived safety of dwelling**

- Very safe ($n = 228$) 5.49 <br>  $p$-Value: 0.20
- Quite safe/Not very safe/Not safe at all ($n = 54$) 5.14

**Indicator of health liabilities in the dwelling**

- 1st tertile ($n = 113$) 5.64 <br>  $p$-Value: 0.27
- 2nd tertile ($n = 93$) 5.28
- 3rd tertile ($n = 76$) 5.29

**Housing amenities**

- 1st tertile ($n = 53$) 5.55 <br>  $p$-Value: 0.15
- 2nd tertile ($n = 103$) 5.40
- 3rd tertile ($n = 126$) 5.39

**Sense of belonging to the neighbourhood**

- Very/somewhat strong ($n = 227$) 5.59 <br>  $p$-Value: <0.01
- Very/somewhat weak ($n = 55$) 4.73

**Adequacy of the neighbourhood for seniors’ lifestyle**

- Excellent ($n = 67$) 6.24<sup>a</sup> <br>  $p$-Value: <0.01
- Somewhat good ($n = 168$) 5.24<sup>b</sup>
- Very/somewhat bad ($n = 41$) 4.91<sup>b</sup>

**Proximity to social network**

- Live alone ($n = 44$) 4.55<sup>a</sup> <br>  $p$-Value: <0.01
- Live with at least one other person or have friends/relatives in neighbourhood ($n = 153$) 5.48<sup>b</sup> <br>  $p$-Value: <0.01
- Live with at least one other person and have friends/relatives in neighbourhood ($n = 85$) 5.76<sup>b</sup>

**Walking environment and transportation services**

**User-friendliness of the walking environment**

- Very/somewhat easy ($n = 211$) 5.82 <br>  $p$-Value: <0.01
- Very/somewhat difficult ($n = 59$) 4.36

**Continued**
Of initial interest is the descriptive profile of social participation among study participants. Among the series of activities included on the scale, only two were identified as frequently adopted activities by a majority of respondents. These activities included attending activities at a community/leisure centre and visiting family members/friends. Interestingly, nearly half of the sample declared being involved in volunteer work at least once a week or almost every day. Using a population sample and a similar assessment scale, Glass and colleagues (Glass et al., 1999; Glass et al., 2006) observed that only 8.1% of participants mentioned being often engaged in ‘unpaid community work’. In a similar analysis of the BASE cohort (Berlin Aging Study), Bukov et al. (Bukov et al., 2002) observed that the participation in activities such as voluntary social engagement was found marginal, being reported by about 10% of them. The particular profile of the current participants, all of whom had been recruited through community organizations, can certainly be related to this distinct pattern of participation, particularly with regard to their frequent engagement in volunteer work. As a matter of fact, although data from a national population survey (Statistics Canada, 2007) reveal that 11.5% of Canadians aged 65 years and older rated their health status as excellent, about 20.0% of respondents in this sample did so, confirming that this sample was more healthy and thus probably more active than the average population of seniors. Future work conducted

Table 3: Continued

<table>
<thead>
<tr>
<th>Correlates</th>
<th>R</th>
<th>Mean level of social participation</th>
<th>p-Value</th>
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<tbody>
<tr>
<td>Frequency of walking episodes in the neighbourhood</td>
<td></td>
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<tr>
<td>Almost every day (n = 163)</td>
<td>5.90</td>
<td>&lt;0.01</td>
<td></td>
</tr>
<tr>
<td>Less than almost every day (n = 118)</td>
<td>4.77</td>
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<tr>
<td>Frequency of transit use</td>
<td></td>
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<tr>
<td>At least once a week (n = 108)</td>
<td>5.73</td>
<td>&lt;0.05</td>
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<tr>
<td>Less than once a week (n = 174)</td>
<td>5.23</td>
<td></td>
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<tr>
<td>Availability of a bus stop/metro station &lt;5-min walk</td>
<td></td>
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<tr>
<td>Yes (n = 231)</td>
<td>5.55</td>
<td>0.22</td>
<td></td>
</tr>
<tr>
<td>No (n = 43)</td>
<td>5.18</td>
<td></td>
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<tr>
<td>Availability of a motor vehicle</td>
<td></td>
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<tr>
<td>Yes (n = 125)</td>
<td>5.66</td>
<td>0.05</td>
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</tr>
<tr>
<td>No (n = 157)</td>
<td>5.24</td>
<td></td>
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<tr>
<td>Have a valid driver’s license</td>
<td></td>
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<tr>
<td>Yes (n = 128)</td>
<td>5.98</td>
<td>&lt;0.01</td>
<td></td>
</tr>
<tr>
<td>No (n = 154)</td>
<td>4.97</td>
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<tr>
<td>Neighbourhood services and amenities</td>
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<td></td>
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<tr>
<td>Perceived accessibility to key resources for older adults (n = 8 items)</td>
<td>0.31</td>
<td>&lt;0.01</td>
<td></td>
</tr>
<tr>
<td>Proportion of services/amenities located &lt;5-min walk (n = 12 items)</td>
<td>0.19</td>
<td>&lt;0.01</td>
<td></td>
</tr>
</tbody>
</table>

Means that do not share subscripts differ at p < 0.05 in the Tukey honestly significant difference comparison.

Table 4: Regression coefficients in the final multivariate equation predicting level of social participation (n = 279)

<table>
<thead>
<tr>
<th>Variable</th>
<th>Unstandardized beta</th>
<th>Standard error of beta</th>
<th>Standardized β</th>
<th>95% CI for standardized β</th>
<th>t-value</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Frequency of walking episodes in the neighbourhood (almost every day)</td>
<td>0.48</td>
<td>0.20</td>
<td>0.13</td>
<td>0.09, 0.88</td>
<td>2.39</td>
<td>&lt;0.05</td>
</tr>
<tr>
<td>SF-12v2 Vitality</td>
<td>0.14</td>
<td>0.04</td>
<td>0.23</td>
<td>0.07, 0.21</td>
<td>3.69</td>
<td>&lt;0.01</td>
</tr>
<tr>
<td>Perceived accessibility to key resources</td>
<td>0.15</td>
<td>0.04</td>
<td>0.20</td>
<td>0.07, 0.23</td>
<td>3.60</td>
<td>&lt;0.01</td>
</tr>
<tr>
<td>SF-12v2 General Health</td>
<td>0.09</td>
<td>0.04</td>
<td>0.15</td>
<td>0.02, 0.17</td>
<td>2.39</td>
<td>&lt;0.05</td>
</tr>
<tr>
<td>Age</td>
<td>−0.04</td>
<td>0.01</td>
<td>−0.17</td>
<td>−0.06, −0.01</td>
<td>−3.09</td>
<td>&lt;0.05</td>
</tr>
</tbody>
</table>

R² = 0.28: F (5, 255) = 19.47 (p < 0.001).
on representative samples would help identify the full breadth of patterns of social participation among seniors. Despite this limitation, the study nevertheless reveals significant variability in terms of participants’ total social participation scores. An important contribution of the present study is the identification of the correlates of such variability.

Except for the housing and social environment variables, the regression analysis revealed significant correlates in each block of variables. As for the health and socio-demographic characteristics, the results obtained are consistent with Bukov et al.’s hypothesis showing that the more resources individuals possess, the more likely they are to participate socially. Indeed, having higher scores on Vitality and General Health indicators were associated with higher social participation scores. In line with other work (Pollak and von dem Knesebeck, 2004; Bowling and Stafford, 2007), participation was also found to decrease with age. Frequency of walking episodes in the neighbourhood emerged as a significant independent correlate while walking almost every day was associated with higher levels of social participation. In a detailed analysis of items comprising their perceived neighbourhood facilities scale, Bowling and Stafford (Bowling and Stafford, 2007) found a lower level of social activities for respondents reporting having no nice place to go for a walk, confirming the relevance of investigating dimensions related to walking behaviour in this population. As people age, their access to private transportation might become more limited. Regular users of alternative transportation modes such as transit and walking could indeed be in a better position to maintain a high level of social participation. More generally, the benefit of walking on seniors’ health and quality of life has already been well established (United States Department of Health and Human Services, 1996). The present study adds to the literature on physical activity and walking among seniors by showing an association with social participation.

An important result was the predictive role of perceived accessibility to key resources. The higher the score was on this variable, the higher the level of social participation. These data corroborate findings reported by Leyden (Leyden, 2003) in a study conducted in eight Irish neighbourhoods. Leyden used a ‘neighbourhood walkability’ measure wherein respondents were instructed to identify, within a list of nine services and amenities (local corner shops/newsstands, etc.), those that they could ‘walk to without too much trouble’ (p. 1547). Respondents who reported greater perceived access to a larger number of services and amenities had higher levels of social capital, after controlling for personal characteristics. Follow-up analyses showed that the associations also existed with each of the four underlying aspects of social capital, including the level of social engagement. In an Australian qualitative study, Baum and Palmer (Baum and Palmer, 2002) examined the reasons why individuals participate or do not participate in social and civic activities. Here again, links between neighbourhood perceptions and levels of participation were found: ‘Higher levels of participation took place in areas where people held a positive image of their environment, where environments were green, and had open spaces and considerable opportunity structures’ (p. 359). Opportunity structures identified by respondents included pubs/café s, corner stores, services clubs, parks and sports grounds. Clearly, such structures emerged as crucial in that they provided meeting places where people established or maintained ‘loose ties and networks’ (p. 354), where they could interact and participate in their community. Lastly, the positive association found for the accessibility to key resources is highly consistent with Bowling and Stafford results where perceiving neighbourhood facilities to be poor was related to lower level of activity in seniors.

Contrary to the existing data (Pollak and von dem Knesebeck, 2004; Bowling and Stafford, 2007), this study did not reveal any relationships between variables related to respondents’ social environment and social participation. The particular profile of respondents all of whom were involved in community organizations for seniors, thus possibly limiting diversity in terms of their social network and integration dimensions, might explain the absence of replication. Future work conducted with more heterogeneous samples of older adults might be better suited to bring to the fore evidence of relationships with social variables.

In the last 10 years or so, several theoretical conceptualizations of the actual processes and mechanisms underlying the association between area of residence and health have been proposed. The present findings are consistent with...
frameworks identifying community services and resources as components of the neighbourhood context which are associated with residents' health outcomes (Anderson et al., 2003; Glass and Balfour, 2003; Macintyre and Ellaway, 2003; Bernard et al., 2007). The association might be particularly important for older adults, a population group more likely to spend a larger portion of their time in their neighbourhood (Glass and Balfour, 2003).

The present study echoes theoretical and empirical work pointing towards the need to develop policies and programs targeting not only people, but also their areas of residence (Macintyre and Ellaway, 1999, 2003). Urban and community planners should aim at designing neighbourhoods offering supportive environments for social interaction and participation. In this respect, the provision of opportunity structures such as parks, local shops and user-friendly buildings and streets where people can ‘achieve easy contact’ (Baum and Palmer, 2002, p. 359), should encourage older adults to go out, interact and socially participate. As elegantly outlined by Leyden (Leyden, 2003), such an objective is far more attainable in walkable, mixed-used neighbourhoods than in car-dependent suburban contexts. Towards this end, the many challenges involved in reconnecting the planning and public health fields have recently been highlighted (Corburn, 2004; Frank and Kavage, 2008). As a renewed interest on built environment and population health is emerging, resources such as health impact assessment (Mittelmark, 2001) or Smart Growth Strategies (Dalbey, 2008) are becoming available to help health promoters engage stakeholders in support of healthy community design [see the special issue of Journal of Public Health Management and Practice (2008, issue no. 14) for a collection of articles on this theme].

Several issues limit the interpretation of current findings. First, as mentioned above, the recruitment mode allowed for the recruitment of a sample of older adults involved in community organizations. Such a group of participants was clearly not representative of the older adult population. Second, the study is limited by its cross-sectional design. Longitudinal studies following social participation patterns of older adults across time would be invaluable in identifying the determinants of this class of behaviours. Last, all measures were obtained by self-report. In order to evaluate the presence of a ‘same source’ bias in the association between neighbourhood dimensions and social participation, future work should include control for psychological dispositions such as optimism or depression. Furthermore, although the potential of subjective assessments of neighbourhood has recently been highlighted (Wen et al., 2006; Bowling and Stafford, 2007; Weden et al., 2008), there are still major benefits of examining associations between objective measures of neighbourhood dimensions and health-related outcomes including social participation. Future studies should consider adding measures obtained from geographical information systems (Ricketts, 2003) or systematic social observations (Raudenbush and Sampson, 1999) into study protocols.

Despite its limitations, the present study makes an important contribution, in being among the very few that contribute to building knowledge about the relationship between neighbourhood perceptions and social participation among older adults. In terms of health promotion for this population, programs and interventions have too often targeted individual determinants at the expense of environmental factors at the root of health and quality of life (Satariano and McAuley, 2003). The present results are important in that they have the potential to shift planners and practitioners’ attention toward more ecological interventions.

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