Assessing the Importance of Social and Environmental Supports for Leisure-time Physical Activity in a Unique Socio-Cultural and Geographical Context

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Abstract

Researchers have found important differences among population sub-groups when considering their 'determinants of physical activity'. The health of Francophones and Northern Ontario residents in Canada has been assessed as relatively poorer than the general population. Understanding the determinants of physical activity in these populations holds considerable promise for well-informed public health intervention. This quantitative study examined the social and environmental determinants of physical activity among two language groups and geographical locations within Northern Ontario Canada. A convenience sample of 256 adults was surveyed using the International Physical Activity Questionnaire, Social Support & Exercise Survey, and the Environmental Supports for Physical Activity Questionnaire. Age and gender adjusted regression models identified that social support from family and peers played a limited role in the Francophone sample compared to the Anglophone sample. Further, perceptions of environmental supports for physical activity in urban and rural locations within Northern Ontario were relatively similar and few of these variables emerged as positive contributors to leisure-time activity levels. Our findings suggest that the importance of social support for physical activity differs based on socio-linguistic status and that environmental supports play a limited role among active northerners. Future research directions and recommendations for practice are offered.

Key Words: *Anglophone, Canada, Francophone, Rural, Urban, Physical Activity, Social Support, Environmental Support.*

Introduction

There have been several reports of poor health among Francophones[1, 2] and Northern Ontario[2,3] residents in Canada. Despite measurably higher rates of illness, physical activity levels in these populations are not unlike those found in other areas.[2,3] While the levels of physical activity might not differ some authors have found important differences among population sub-groups regarding the 'determinants of physical activity'.[4-6] Because the health benefits of physical activity are well documented and widely accepted,[7] a better understanding of predictors of physical activity in unique populations may help inform strategic interventions for those deemed to be insufficiently active.

The social and environmental fabric of this population is of particular intrigue for these authors, especially that it has rarely been studied in the context of physical activity. Relevant is research by Picard and Allaire[2] who reported that despite poorer health, Northern Ontario Francophones were more likely to indicate a 'strong sense of community belonging' than other sub-groups in the province. At the same time, researchers have demonstrated that similar social factors (e.g., family and peer support) have a cogent effect on physical activity. In their extensive review of the literature, Trost et al.[8] confirmed that social support was a significant positive correlate with physical activity. Less understood at this juncture of the literature's history, are the relative influence of this variable in unique and certainly less-studied populations (i.e., age,[9] gender,[10,11] and culture[12]). In light of Picard and Allaire's findings, we hypothesize that support from family and peers will have a greater impact on activity levels among the Francophone population.

The reader should be aware those living in Northern Ontario find themselves in an area that is best recognized for its wilderness and isolation. As such, environmental variables also merit a good deal of attention. Indeed, a number of studies have identified several underlying environmental factors that have been associated with physical activity participation. These included, but were not limited to, access to facilities,[13,14] neighborhood safety,[15,16] seasonal climate,[5] street traffic,[5,15] presence of sidewalks,[5,15] area aesthetics, [5,15] and dispersion of amenities.[17,18]

The influence of environmental supports on physical activity is strongly related to geographical variables such as population density and proximity within larger metropolitan areas. For instance, Sealans and Handy[19] reported that pedestrian infrastructure, such as the presence and condition of sidewalks, were strong predictors of recreational walking. In addition, Wilcox et al.[15] found that urban women were more likely than rural women to report on the facilitating effects of having access to sidewalks (e.g., 79.5% compared to 15.2%) and streetlights (e.g., 80.9% compared to 31.9%) on recreational walking. Northern Ontario covers nearly 90% of the province, but houses only 6% of its total population.[20] Northern Ontario's population density (1 person per square kilometre) is less than 1% of Southern Ontario's population density (115 persons per square kilometre). Consequently, based on the above outlined geographical context and findings from previous research, one might expect that the typical environmental supports found to increase levels of physical activity in some centers may play a limited role for Northern Ontario residents; even in its larger urban locations.

The social and environmental context which defines Northern Ontario and its Francophone population indeed suggests differences in determinants of physical activity are probable. Thus, we postulate that this study would make on interesting contribution to this body of literature and of even greater importance; such findings would provide useful information geared towards improving the health of this population by way of increased physical activity.

Purpose of Study

The purpose of this study was to explore the role of social and environmental supports for physical activity among a sample of Northern Ontario residents in Canada.

Methods

The primary research issue addressed in this study was the extent to which social and environmental supports promote physical activity. From this, four research questions were posed:

a) Do perceptions of social supports for physical activity differ between Francophones and Anglophones?
b) Do perceptions of environmental supports for physical activity differ between urban and rural dwellers in Northern Ontario?
c) To which degree do perceptions of social supports for physical

activity influence levels of leisure-time physical activity among Francophones and Anglophones?

d) To which degree do perceptions of environmental supports for physical activity influence levels of leisure-time physical activity among urban and rural dwellers in Northern Ontario?

Study Design and Sample

This quantitative study used a convenience sampling frame. Convenience sampling was selected due its feasibility and ease of recruitment; we attempted to limit biases by having specific inclusion criteria and by using a representative sampling frame. A respondent quota based on language, geographical location, gender, and age was applied to ensure proper representation within the respondent group.

The intended sample was first stratified based on the percentage of Francophones within five designated geographical areas of Northern Ontario. Northern Ontario is comprised of 10 territorial districts, the five areas which where included in this study collectively encompass Northeastern Ontario; Algoma, Cochrane, Nipissing, Sudbury, Timiskaming (see Figure 1). One-third of the North's population lives in rural areas (35%), 86% of the remaining two-thirds reside in one of its five major urban centers; Thunder Bay, Sault-Ste-Marie, Timmins, Sudbury, and North Bay.[20] We surveyed respondents from three urban locations (Greater City of Sudbury, North Bay, and Timmins) and five rural locations (Hagar/Markstay/Warren, Sturgeon Falls/Verner, Elliott Lake, New Liskeard, and Kapuskasing). Rural was defined as communities with a population of less than 10,000 people. This definition is documented elsewhere.[21] Even distribution was also sought across genders and a minimum of 25% of respondents were required between the ages of 18-34, 35-50, and 51-69 respectively. The remaining 25% of respondents could fall anywhere between the ages of 18 and 69. A sample of approximately 220 respondents was sought. A total of 256 respondents accepted to participate in this study.

Due to the large geographical area, participants were recruited across Northern Ontario by nine research assistants (RA). RAs were provided with specific procedural guidelines and underwent a two-hour training session. Each RA received a respondent quota based on the geographical location of their intended collection sites. They recruited participants at multiple locations, including shopping malls, grocery stores, recreation facilities and other public places to ensure that persons from various demographic backgrounds were included. The following inclusion criteria were applied: (a) first language learned as a child and still understood was either French or English, (b) age was 18 to 69 years, and (c) were a resident of a Northern Ontario community. If respondents identified any language other than French or English as their first language learned as a child and still understood, they were classified as "Allophones".[1,2] Allophones were excluded from this study as they represent a heterogeneous group that is not clearly interpretable and it would be very difficult to include them for comparative purposes. Date, time, and location of collection, as well as the respondent's relationship to the RA, if any, were recorded. Upon acceptance to participate, respondents were asked to read an information form and were asked to provide written consent. Research Ethics Board approval was obtained from the authors' academic institution. The respondents then completed the survey and immediately returned it to the RA.

Measurements

International Physical Activity

Questionnaire

To assess physical activity levels, the project used the International Physical Activity Questionnaire (IPAQ), and more specifically its Leisure-Time Physical Activity components. For a number of reasons, only associations with Leisure-Time Physical Activity were assessed in this study: a) due to undeniable evidence of the health benefits of leisure-time physical activity,[22-24] b) due to the modifiable nature of leisure-time physical activity from a public health perspective and c) due to the nature of the other questionnaires used to generate predictor variables. The IPAQ self-administered long-version (last 7 days) assesses the frequency, duration, and intensity (Walking 3.3 METs, Moderate Activities 4.0 METs, and Vigorous Activities 8.0 METs) of activities during a one week period. The questionnaire provides the researcher with total activity scores expressed as metabolic equivalents (METs), and it does so by dividing it by underlying activity domain (i.e. leisure-time, domestic and gardening, occupational and, transportation related activities). Both categorical (low, moderate, high) and continuous (Met-minutes/week) indicators of physical activity can be obtained from the IPAQ. The measurement properties of the IPAQ have been found to be acceptable.[25] In 2000, the "International

Consensus Group for the Development of the International Physical Activity Questionnaire" undertook an extensive reliability (rho = 0.81, 95% CI 0.79-0.82) and validity (rho = 0.33, 95% CI 0.26-0.39) study across 12 countries at 14 different sites.[25] Their study confirmed that the measurement properties of the IPAQ "are at least as good" (p. 1388) as other more seasoned self-report measurements of physical activity. More recently, Gauthier et al. [26] confirmed the results obtained in prior research when assessing the French Canadian version of the IPAQ Self-administered long-version (last 7 days). Intra-class correlation coefficients (ICC) revealed that the IPAQ-French Canadian results were stable over time and validity was confirmed relative to pedometer step counts (Pearson $r = 0.66$ $p<0.01$).

Social Support &Exercise Scale

The Social Support and Exercise Scale (SS&ES) was used to measure physical activity-related family and peer support. The SS&ES asks the respondent a series of questions pertaining to social support for exercise from (a) family and (b) peers, generating a summary score for each. With the approval of the questionnaire's author, the term exercise was replaced with the term 'physical activity' in the data collection package. The measurement provides two continuous scores on a scale from 0 to 50. The psychometric properties of this questionnaire were assessed by others and sub-scales were deemed appropriate.[27] Test-retest reliability ranges were acceptable (range= 0.55-0.79) and internal consistency scores for the friends and family support for exercise sub-scales were high (Cronbach's Alpha= 0.84-0.91). The questionnaire was only available in English and therefore appropriate translation procedures were followed.[28,29] Additional psychometric assessments of this measure were not performed.

Environmental Supports for Physical Activity Questionnaire

The measurement selected to assess perception of environmental predictors of physical activity was the 'Environmental Supports for Physical Activity Questionnaire'.[30] The questionnaire asks respondents about their perceptions of neighborhood and community level environmental variables as these relate to physical activity. Neighborhood is defined as the area within one-half mile or a 10-minute walk from their home, while the community is defined as a 10-mile or 20-minute drive from their home. Questions provide a dichotomous response. The psychometric properties of this questionnaire have been deemed acceptable.[31] Survey responses were compared to Geographical Information System (GIS) objective measurements (Kappa= -0.02-0.37), and reliability was assessed by test-retest (rho= 0.28-0.74). The questionnaire was only available in English and therefore appropriate translation procedures were also followed.[28,29] Additional psychometric assessments of this measurement were not performed.

Statistical Analyses

Data were prepared and analyzed with each questionnaire's appropriate guidelines for data processing and analysis. Descriptive statistics were reported by socio-cultural status and geographical location. Group differences were tested using t-tests for continuous variables (i.e., Leisure-Time Physical Activity and Social Support scores) and Fisher's Exact tests for dichotomous variables (i.e., Environmental Supports). Statistical significance was set at $p<0.05$ for group comparisons. Multiple linear regression models were also computed to assess the level of variance in Leisure-Time Physical Activity (Met-minutes/week) explained by either perceived social supports based socio-cultural status or environmental supports based on geographical location. Only independent variables with correlation values greater than 0.3 [32] or those having a significant ($p<0.05$) bivariate relationship to leisure-time physical activity were entered in the model. Cases with missing variables were removed from the analyses. Models were adjusted for age and gender. Standard methods of entry were used. The Statistical Package for the Social Sciences (SPSS for Windows 14.0, SPSS Inc., Chicago, IL) was used for all data analyses.

Results

Sample Characteristics

A total sample of 256 respondents accepted to participate in this study: 157 Francophones (61.3%) and 99 Anglophones (38.7%). In this sample, 51.2 % were women, and 46.5% lived in rural areas. The mean age of the sample was 39.43 years (range of 18-67). Geographical representation across the northern part of the province according to the quota based sampling frame was confirmed (see Tables 1a and 1b). A more detailed description of the sample is provided in Table 2. The sample in this study was relatively active, 61.2% of respondents reported at least moderate levels of leisure-time physical activity (>600 MET-min/week).[33] This is approximately 10%

higher than the general Canadian population.[34] Descriptive results from the IPAQ, SS&ES and ESPAQ are presented in Table 3 for both language groups and geographical locations. For IPAQ results, cases with missing data and 'unreasonably high' values were identified and excluded from the study. In this study, 29 participants were excluded from the analyses due to the 16-hour maximum value rule (respondents of the IPAQ are excluded if the sum of all Walking, Moderate and Vigorous time variables is greater than 960 minutes or 16 hours).[33] Thus, the sample used for statistical analyses was 227 respondents.

Group Comparisons

To answer research questions (a) and (b), independent-samples t-tests were first conducted to compare leisure-time physical activity scores among a) language groups and b) geographical locations. There were no significant differences identified between Francophones and Anglophones (t (225) = -1.51, p=.13) or Urban and Rural residents (t (225) =-1.63, p=.10). Independent-samples t-tests were also used to compare social support scores among language groups. There was no significant difference in family support scores for Francophones and Anglophones (t (209) = -1.14, p=.26). However, there was a statistically significant difference in peer support scores between language groups (t (209) = -2.55, p=.01). Francophones reported a higher mean score (M = 24.75, SD = 10.64) than Anglophones (M = 21.08, SD = 9.31). Fisher's Exact tests indicated there were no significant differences when comparing the perceived prevalence of any of the environmental supports for leisure-time physical activity based on urban and rural geographical location. Results are presented in Table 3.

Socio-Environmental Correlates of Leisure-Time Physical Activity among Language and Geographical Sub-Groups

With regards to research questions (c) and (d), preliminary analyses did not uncover violations of normality, linearity, multicolinearity or homoscedasticity. A correlation matrix (see Table 4) helped identify variables associated to IPAQ Leisure-Time Physical Activity scores.

Model I: Francophones and Anglophones

Among Francophones, peer support was entered into the model. The model reached statistical significance ($p<0.002$) and explained 8.8% of the variance in Leisure-Time Physical Activity (LTPA) levels. However, when the relative contribution of this independent variable after adjusting for age and gender was considered, it did not make a significant individual contribution to the model (see Table 5). Specifically, peer support only made a significant individual contribution to leisure-time physical activity among Francophone men ($p<0.005$). Among Anglophones, peer support and family support were entered into the model. The model reached statistical significance ($p<0.001$). The model explained 21.7% of the variance in Leisure-Time Physical Activity (LTPA) levels. When the relative contribution of each independent variable after adjusting for age and gender were considered, both peer support ($B= .37$ $p<0.01$) and family support ($B=.23$ $p<0.05$) made significant individual contributions to the model (see Table 5).

Model II: Urban and Rural

We then considered urban and rural variations as it relates to environmental supports for physical activity. Among Urban residents, area aesthetics and trust of neighbors were entered into the model (each had a negative association to leisure-time physical activity). The model reached statistical significance ($p<0.006$) and explained 10.3% of the variance. Only area aesthetics ($B = -.25$ $p<0.02$) made a significant negative contribution after adjusting for age and gender. Thus, rating your neighborhood as 'unpleasant' was related to leisure-time physical activity scores among urban residents (see Table 6). Among rural residents, only access to shopping malls was entered into the model. The model reached statistical significance ($p<0.05$) and explained 5.0% of the variance in Leisure-Time Physical Activity (LTPA) levels. After adjusting for age and gender, access to shopping malls was no longer a significant individual contributor to the model (see Table 6).

Discussion

Social and environmental supports for leisure-time physical activities play an interesting role when Northern Ontario residents are considered. The importance of social support from family and peers was limited among Francophones and few environmental supports emerged as positive contributors to leisure-time activity levels in this northern Canadian region. These findings are further discussed.

Francophones, on average, reported higher perception of social support from peers for physical activity than their Anglophone counterparts. However, when assessing the importance of social supports for physical activity among these language groups, social

support clearly made a stronger contribution to levels of physical activity among Anglophones than among Francophones. As a result, our hypothesis related to the importance of social support for physical activity among Francophones was not supported. In general, social support for physical activity from family and peers has been consistent among adults (i.e., positive significant relationship),[8] as was found among Anglophones. In our sample of French Canadian adults, only the support from peers was associated with higher levels of leisure-time physical activity; however, it did not make a significant individual contribution after adjusting for age and gender.

The impacts of social support among Francophones was further unveiled when they were assessed by gender. More specifically, support from peers made a significant individual contribution to higher levels of leisure-time physical activity among men. However, neither family nor peer support were strong predictors of physical activity among women. These findings are surprising, considering that social support from partners, family and friends is frequently cited among women as a way of overcoming common barriers (i.e. time) to being active.[35] Brown et al. found that women who had access to social support were in a better position to negotiate such constraints. Our study does suggest that Francophone women in this Canadian context, in general, do not rely on others to engage in active recreation.

Work by Eyler et al. [12] may further elucidate the results of this study. In a large-scale study of minority women, these authors found that subjects who reported being completely sedentary (i.e., no physical activity in the past two weeks) had the lowest levels of physical activity-related social support, yet those who 'exercised regularly' (i.e. 5 days a week for 30 minutes) were neither reliant on social support from family or peers. The authors suggested that social support for exercise among women was needed to initiate the new behavior; however, such was not needed to sustain it over a period of time. In essence, our findings might suggest that our sample of Francophones, particularly women, were relatively consistent in their leisure-time activity routines.

When assessing the relative environmental supports for physical activity by geographical location, interesting findings also emerged. Our analyses found that among our northern Canadian sample, very few environmental supports for physical activity made relevant contributions, even after considering urban and rural contexts. In essence, none of the environmental variables made a positive contribution in any of the models. Also of interest was the general homogeneity in the prevalence of such environmental supports in Northern Ontario's urban and rural locations. Our findings differ from those of others.[15]

This homogeneity and lack of contribution of environmental supports for physical activity may be explained through a better understanding of this geographical context in general. For instance, most studies support the positive influence of safety,[36] area aesthetics,[37] and more recently pedestrian infrastructure (i.e. access to sidewalks) on recreational physical activity.[19] Interpretations of our findings suggest recreational physical activities in this area are not necessarily supported by such environmental factors and may indeed be more reflective of its physical isolation. For instance, northerners may seek opportunities for active recreation that are available based on the geographical location (i.e. increased opportunities for outdoor recreation). In essence, our findings suggest that physically active northerners may find ways of maintaining a healthy lifestyle that are not necessarily driven by the built environment.

Conclusions

The purpose of the current study was to explore the importance of social and environmental supports for physical activity in a unique socio-cultural and geographical context. In doing so, several interesting findings emerged, and as a result important public health implications are offered. First, our findings suggest that the importance of social support for physical activity differ based on socio-linguistic status. Social support accounted for a much greater variance in activity levels among Anglophones than it did among Francophones. More specifically, active Francophone women seemed autonomously motivated, while only peers played an important role in influencing activity levels among Francophone men. Essentially, women have multiple roles and generally have fewer opportunities for physical activity during 'leisure-time'.[38] Health promoters need to instill a sense of self-reliance among Francophone women as it relates to finding 'time' to be physically active.

As well, various environmental supports were not associated to being active among this northern sample, and the prevalence of environmental supports did not differ based on urban or rural residency. Indeed, northerners in general have consistently reported higher levels of leisure-time physical

activity[3] despite what the literature would call a less favorable built environment (i.e., lack of sidewalks and street lighting). Thus, opportunities for physical activity are abundant and health promoters should encourage northern residents to take advantage of their unique geographical surroundings.

Future studies with similar populations need to further explore the lack of importance attributed to social supports for physical activity among Francophones. For instance, future studies need to consider additional socio-demographic factors (i.e. marital status, presence of children) and their relative contribution to the interpretation of such findings. As well, seeing that environmental supports for physical activity played a limited role within this geographical context, future studies need to consider eliciting additional barriers to becoming physical activity beyond those driven by the built environment. Further, future consideration should also be given to qualitative inquiries as a means of shedding light on the interpretation of the quantitative findings from the current study. Nevertheless, the findings from this study continue to highlight the importance of 'targeted' public health promotion.

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Table 1a. Quota Based Convenience Sampling Frame- Francophones (n=157)

		Francophone Sample				Actual Total Sample
District	Target Sample	Men	Women	Rural	Urban	
Algoma	7%	2	4	6	0	4%
Cochrane	30%	22	27	19	30	31%
Nipissing	16%	18	18	16	20	23%
Sudbury	40%	28	30	22	36	37%
Temiskaming	7%	2	6	8	0	5%
Total	100%	72	85	71	86	100%

Table 1b. Quota Based Convenience Sampling Frame- Anglophones (n=99)

	Anglophone Sample					Actual Total Sample
District	Target Sample	Men	Women	Rural	Urban	
Algoma	7%	5	2	7	0	7%
Cochrane	30%	13	12	13	12	25%
Nipissing	16%	14	9	12	11	23%
Sudbury	40%	19	19	10	28	38%
Temiskaming	7%	2	4	6	0	6%
Total	100%	53	46	48	51	100%

Table 2. Demographic Description of Northern Ontario Sample (n = 256)

	Men	Women	Total
Age (mean)	39.1	39.75	39.43
Francophones	72	85	157
Anglophones	53	46	99
Rural	52	67	119
Urban	73	64	137

Table 3. Descriptive Statistics for Social and Environmental Supports of Physical Activity (n=227)

	Socio-Cultural Status		Geographical Location		X^2 or t
	Francophones	Anglophones	Urban	Rural	
LTPA (mets/mim/week)	1738.64 (1816.95)	1373.10 (1694.62)	1765.48 (2031.73)	1393.97 (1383.80)	p=.13 ; p=.10
Family support (0-50)	24.97 (8.75)	23.51 (9.52)	-	-	p=.26
Peer support (0-50)	24.75 (10.64)	21.08 (9.13)	-	-	p=.01**
Active neighbors	-	-	61.9%	61.8%	p=.98
Pleasant area aesthetics	-	-	85.4%	83.0%	p=.62
Good street lighting	-	-	45.2%	43.4%	p=.80
Safe from crime	-	-	80.8%	76.6%	p=.45
Trust of neighbors	-	-	92.2%	88.2%	p=.35
Access to sidewalks	-	-	52.8%	43.0%	p=.14
Access to private facilities	-	-	93.5%	86.9%	p=.09
Access natural facilities	-	-	96.0%	92.1%	p=.21
Access to shopping malls	-	-	91.9%	85.0%	p=.10
Access to public recreation facilities	-	-	98.3%	98.0%	p=.85
Access to schools	-	-	94.3%	91.0%	p=.34

Note: METs are multiples of the resting metabolic rate and a MET-min/week is computed by multiplying the MET score of an activity by the minutes performed over a seven day period (see http://www.ipaq.ki.se/ipaq.htm for additional information).
p< 0.05*
p< 0.01**

Table 4. Correlations Matrix: Relationship between Social and Environmental Supports and Physical Activity by Leisure-Time IPAQ Scores

	Language Groups		Geographical Location	
	Francophones	Anglophones	Urban	Rural
Age	-.24**	-.10	-.28**	-.03
Gender	.19*	.16	.11	.23*
Family support	.01	.32**	-	-
Peer support	.23*	.40**	-	-
Activity neighbors	-	-	-.02	.04
Pleasant area aesthetics	-	-	-.29**	.11
Good street lighting	-	-	.03	.00
Safe from crime	-	-	-.02	-.01
Trust of neighbors	-	-	-.25*	-.03
Access to sidewalks	-	-	.00	.02
Access to private facilities	-	-	.07	.11
Access to natural facilities	-	-	.01	.07
Access to shopping malls	-	-	.04	.20*
Access to public recreation facilities	-	-	.01	.10
Access to schools	-	-	-.04	.13

p< 0.05*
p< 0.01**

Table 5. Social Correlates of Leisure-Time Physical Activity among Language Groups (n = 227)

	Francophones				Anglophones			
Independent Variables	B	SE B	ß	p Value	B	SE B	ß	p Value
Age	-23.56	11.90	-.18	.05*	3.13	13.14	.03	.81
Gender	539.65	313.53	.15	.08	724.23	348.70	.21	.04*
Peer Support	25.31	15.94	.15	.12	70.11	20.44	.37	.001**
Family Support	-	-	-	-	41.71	1.91	.23	.03*

Francophones: Adjusted R^2 = .088
Anglophones: Adjusted R^2 = .217
p< 0.05*
p< 0.01**

Table 6. Environmental Correlates of Leisure-Time Physical among Geographical Groups (n = 227)

	Urban				Rural			
Independent Variables	B	SE B	B	p Value	B	SE B	B	p Value
Age	-18.47	14.34	-.131	.20	-3.89	9.98	-.04	.70
Gender	308.09	286.20	.08	.43	562.40	285.95	.20	.05*
Pleasant area aesthetics	-1579.79	681.87	-.25	.02*	-	-	-	-
Trust of neighbors	-607.67	813.86	-.08	.46	-	-	-	-
Access to shopping malls	-	-	-	-	614.46	391.89	.16	.12

Urban: Adjusted R^2 = .103
Rural: Adjusted R^2 = .05
p< 0.05*
p< 0.01**

Figure1. Geographical Context

Note: Territorial Districts 4, 5, 6, 7, & 8 were included in the study; these areas form most of Northeastern Ontario
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