PERCEPTION OF WINTER IN CANADA : A COMPARISON BETWEEN EDMONTON (ALBERTA) AND MONTREAL (QUEBEC)

Jerry Toupin, Ph.D.[1]

ABSTRACT

Canada, the second largest country in the world, is known namely for its large amount of snowfall, as well as the roughness of its cold winters. From coast to coast, more than 100 cm of snow (close to 1000 cm in certain areas of the Canadian Rockies) is expected to fall every winter. Southern parts of the country may easily see winter stretching over five months.

Such a scenario raises the question on how Canadians really feel about winter, snow and cold; this is precisely what this paper examines. Although physical aspects of winter have been studied at length, very little has been done in the field of social climatology, particularly in Canada. In order to verify two major hypotheses: does age, and local winter climate influence how Canadians feel towards winter? Overall, 300 residents (about half of this total in Edmonton, Alberta and the rest in Montreal, Quebec) were interviewed about their perception of winter.

This study reveals that there is indeed an urban perception of winter (rather quite negative) that is, to a degree, a function of age (winter is perceived to be worse as people get older) and minor differences according to local winter climates.

INTRODUCTION

Although many scientists have studied physical aspects of winter climates in Canada (Potter, 1965, Richards, 1972, Plamondon, 1979, Gray and Male, 1981), very little has been done to study social aspects of winter in Canada (Deffontaines 1957, Lamontagne, 1983). Yet, winter in Canada accounts for a large part of our life. Over the years, did Canadians develop an urban perception of winter? Does age and local winter climates have an influence on how they perceive winter? These are precisely the questions that this paper tries to answer by shedding light to a better understanding on social winter climatology in Canada.

Let's first have a look at regional winter climate differences between Montreal and Edmonton. While it is interesting to note that Koppen's classification of climates put both cities in the same category (Dfb, a continental temperate climate), Litynski's numerical classification (1984) is more helpful as it classifies Montreal as type 23C (a moderate, fairly wet continental climate; average yearly temperature of 7.4°C, and total average yearly precipitation of 1062.5 mm, including 226.2 cm of snow, according to the Montreal McGill station, 1971-2000), while Edmonton belongs to type 12I (a sub polar intermediate climate with moderate amount of precipitation; average yearly temperature of 3.9°C and total average yearly precipitation of about 476.9 mm, including 123.5 cm of snow, according to the Edmonton Municipal Airport station, 1971-2000)

A glance at Table 1-A and 1-B confirms Litynski's distinctions and gives us a better understanding on differences during winter for both cities. Overall, Edmonton is colder (for the winter months; November to March,

Table 1-A: Average monthly temperature (1971-2000 in Celsius)

	J	F	M	A	M	J	J	A	S	O	N	D
Edmonton average= 3.9°C	-11.7	-8.4	-2.6	5.5	11.7	15.5	17.5	16.6	11.3	5.6	-4.1	-9.6
Montreal average= 7.4°C	-8.9	-7.2	-1.2	7.0	14.5	19.3	22.3	20.8	15.7	9.2	2.5	-5.6

the average temperature in Edmonton is –7.3°C while Montreal registers –4.1°C, and gets less snow (123.5 cm compared to 226.2 cm for Montreal that gets almost twice as much snow).

Table 1-B: Average monthly snowfall (1971-2000 in cm)

	J	F	M	A	M	J	J	A	S	O	N	D
Edmonton average= 123.5cm	24.5	15.8	16.8	13.4	3.5				1.5	7.8	17.9	22.3
Montreal average= 226.2cm	45.9	46.6	36.8	11.8	0.4					2.2	24.9	57.8

Source: Edmonton Municipal Airport station (downtown Edmonton), Montreal McGill station (downtown Montreal). Environment Canada. (www.climate.weatheroffice.ec.gc.ca/climate_normals)

In general, winters are slightly longer in Edmonton, compared to Montreal (snow usually stays on the ground from November 5th until about April 16th for 121 days with snow cover at Edmonton Municipal Airport, while Montreal (McGill station) records 116 days with snow cover arriving around November 19th and leaving around April 2nd (Potter, 1965, based on cover of 2,54 cm or more). Edmonton sees measurable snowfall stretching on 9 months while Montreal registers 8 months (snowfall in September in Edmonton is not unusual). In the wintertime average wind is slightly stronger in Montreal (12km/h from the SW, and 11,5km/h from the South for Edmonton). While Hourly Bright Sunshine is about equal between Montreal and Edmonton, one must remember that for Edmonton the sun rises only around 8:00 a.m. for the months of November, December and January. Therefore, early commuters face darkness on their way to work, while those who live in Montreal don't.

METHODOLOGY

In order to verify our hypotheses, we developed a questionnaire aimed at measuring various segments of winter, notably: (a) the season that seems to be perceived as the most difficult (generally winter) according to nine age groups (see Table 2) and reasons explaining why this season is perceived as the most difficult, (b) perceived and perceptible phases during winter. This questionnaire was answered by 186 residents of Montreal, Quebec (45° 26'N and 72° 35' W) and 129 residents of Edmonton, Alberta (53° 33'N, 113° 28' W), mostly in June 96 for Montreal and from September 2000 to June 2001 for Edmonton. Participants interviewed were born and raised in those cities and public places such as schools, universities, shopping malls, and senior citizen residences were targeted. One must admit that it remains challenging and just about impossible to get equal (even) amounts of people for our nine age categories (see Table 2) and limits such a methodology. Nevertheless, with the number of people interviewed (315 in total), it appears rather obvious that the perception that one develops of winter in Canada, in urban areas (one may refers to a rather very negative "urban" perception of winter), largely depends on the age of the person and that local winter climates has its share of explanation to how people look at this season.

RESULTS AND DISCUSSION

The Most Difficult Season: Reasons and Definition of Winter According to the Age Groups.
To the very first question asked: in your opinion, is there a season you find more difficult? Overall, 62% answered winter (52% in Montreal compared to 75% in Edmonton). In both cities, one can see (figure 1) that as people get older, the percentage against winter perceived as the most difficult season increases (r=0.63 for Montreal, while r=0.80 for Edmonton). In Montreal people aged 10 years old or less don't seem to mind winter so much, but as soon as they reach the age of 11, it becomes a problem. Apart from them, only the 41-50 age group is around the 50% level as well as those from 21-30. In Edmonton, the 11-15 age group is the only one different from all the others with a slightly better look at winter.

In both geographical areas, the majority of the people interviewed admitted that age influences their perception of winter. In general, people thought that winter seemed less difficult when they were younger, but becomes more difficult as they get older. Therefore, age remains a vital element in explaining the way Canadians look at winter.

Most common reasons given to explain why winter is perceived as the worst season of all is the "cold" and the "road conditions". The word "cold" also applies for best defining winter in both cities; "snow" comes second in Montreal while "sports-games" is second in Edmonton. Regional climate differences are noticeable in Edmonton (Chinooks, dry weather and darkness are also mentioned for describing winter, but obviously just about nil in Montreal) and tend to confirm the hypothesis of regional winter differences in the perception of winter in Canada (as Montreal does not get Chinook winds, has slightly more daylight in wintertime and rather humid winter conditions)
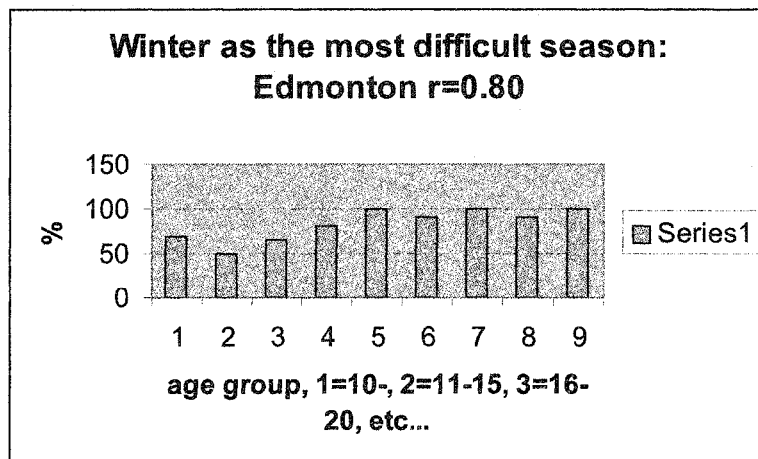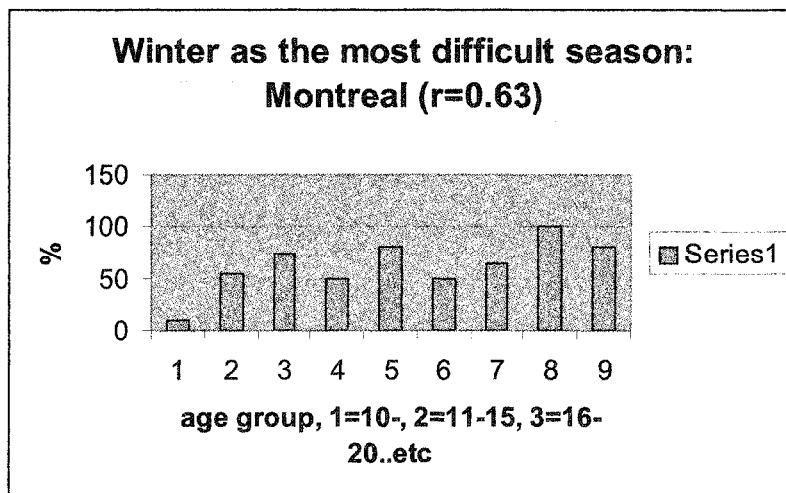

Figure 1. Winter as the most difficult season in Montreal and Edmonton.

Table 2. In your opinion, is there a season that you find more difficult?

Age	N	Edmonton n=129	%	N	Montreal n=186	%
10 or younger	24	Winter	70	25	Winter	10
11-15	16	Winter	50	28	Winter	55
16-20	37	Winter	65	8	Winter	75
21-30	11	Winter	80	74	Winter	50
31-40	6	Winter	100	19	Winter	80
41-50	12	Winter	90	17	Winter	50
51-60	10	Winter	100	3	Winter	66
61-70	8	Winter	90	2	Winter	100
71+	5	Winter	100	10	Winter	80

Perceived and Perceptible Periods During Winter

At this stage, although it is now clear that in Canada, winter remains the most difficult season for the majority of people, can they perceive different segments during that season? Answers to this question show that most of them do. Indeed, in Table 3, we see various perceived periods by people for both cities.

Among others, cold spell (noticed higher in Edmonton with 40%), overall winter tends to be colder in Edmonton (Table 1-A), darkness (20% in Edmonton while Montreal registers 0.5%), one must remember that while Hourly Bright Sunshine is about equal between Montreal and Edmonton, in Edmonton the sun rises only around 8:00 a.m. for the months of November, December and January. Therefore early commuters face darkness on their way to work, while those living in Montreal do not. A Chinook (a typical Albertan winter micro climate), beginning, middle and end of winter are also registered by some residents of Edmonton, as well as, middle, end and cold spell (12%) for Montreal.

Table 3. Cumulative on perceived periods in winter.

Perceived periods	Edmonton (% of answers)	Montreal (% of answers)
No	21	38
Cold spell	40	12
Darkness	20	0.5
Beginning	16	11
Middle	12	15
End	12	14
Chinook	12	0
Christmas	8	10
Snowstorm	1	5
Depress	0	3
Warmer	0	5

Now, do people find winter difficult all the time? In order to answer this question, we have asked them how they feel towards four distinctive segments of winter (perceptible periods): a) the very first snowfall, b) Christmas, c) February-March, d) the snow melting (in the springtime). This was aimed at discovering whether people feel bad about winter at all times or if, on the other hand, we can identify positive and negative sequences during the cold season. Results are shown In Table 4.

Table 4.During winter, how do you perceive these periods? a) the very first snowfall,
b) Christmas, c) February-March, d) the snow melting (in the springtime).

Edmonton	%	Montreal	%
a) Positive	53	a) Positive	70
Negative	27	Negative	16
Neutral	10	Neutral	11
No answer	10	No answer	3
b) Positive	67	b) Positive	80
Negative	9	Negative	10
Neutral	11	Neutral	6
No answer	1	No answer	4
With snow	9		
c) Positive	34	c) Positive	23
Negative	43	Negative	53
Neutral	13	Neutral	12
No answer	6	No answer	8
Posi-Nega	3		
d) Positive	62	d) Positive	47
Negative	25	Negative	35
Neutral	6	Neutral	11
No answer	7	No answer	6
		Posi-Nega	1

Overall, the very first snowfall is seen as positive (stronger in Montreal with 70% of the people interviewed, some residents explained this by the fact that it reminds them of their childhood). While Christmas translates into the merriest time of winter in both cities, February-March (this is after all, half of the whole winter) is perceived as the most negative time (commonly known as the winter blues) of the cold season. Finally the snow-melting period is also seen as a sign of relief, although more negativism is recorded in Montreal as possibly more snow has to melt, leaving more water and messy areas around the city. It must also be added that the city of Montreal uses salt rather than sand (the case in Edmonton) to fight snow and ice on roads which certainly doesn't help appreciating winter.

CONCLUSION

In both cities, winter is regarded as the toughest season of the year and their negative perception of the cold season worsens as people gets older. Local winter climates are felt whether people live in Montreal or in Edmonton. Highlights are:

MONTREAL	EDMONTON
-People under the age of 10 don't mind as much about winter.	-Cold has a major effect in Edmonton.
-Amount of snow is more noticeable.	-Icy road conditions, darkness,Chinook.
-Very first snowfall and Christmas are seen as more positive.	-February-March and snow melting in springtime are more positive.
-Florida remains the best getaway.	-Mexico, California, Arizona, Hawaii, and Banff are favorite spots to escape winter.
	-Past winters were seen as colder.

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