

Fighting teenagers' sedentarity: The challenges of mobility in exurbia

Nabila Bachiri, Carole Després & Geneviève Vachon¹

Université Laval. Québec, Canada

Abstract

This paper is about car dependency among teenagers living in 'exurban' locations, where the city meets the countryside. It combines the results of a study on teenagers' mobility (Bachiri, 2006) with a physical analysis of Quebec City's exurbia (Moretti & Vachon, 2005). Both studies were conducted by the Interdisciplinary Research Group on Suburbs (*GIRBa_Groupe interdisciplinaire de recherche sur les banlieues*). This qualitative research explores the link between urban sprawl and the mobility of 30 teenagers aged between 12 and 18, living in six exurban territories within the Quebec City metropolitan area. The results point to teenagers' strong dependency on being accompanied by their parent(s) or other significant adults to come and go in settings where, for the most, public transportation is absent or deficient, and where biking is often considered dangerous and walking inefficient. Teenagers spent several hours a week sitting in a school bus or in the back of their parents' car. The results suggest adult-dependent and potentially sedentary lifestyles, with eventual hazardous impacts on teenagers' health and socio-affective development.

Key-words: Teenagers, urban sprawl, dependent mobility, independent mobility.

La sedentaridad de los adolescentes: los desafíos de la movilidad en la periferia

Resumen

Este documento trata acerca de la dependencia del automóvil entre los adolescentes que habitan en sectores periféricos, lugar donde la ciudad se integra a la naturaleza. La investigación combina los resultados del estudio de la movilidad de los

¹ Groupe de recherche interdisciplinaire de recherche sur les banlieues. École d'architecture. Faculté d'aménagement, d'architecture et des arts visuels. Université Laval. Québec, Canada. G1K 7P4. nabila.bachiri.1@ulaval.ca, carole.despres@arc.ulaval.ca, genevieve.vachon@arc.ulaval.ca.

adolescentes (Bachiri, 2006) con un análisis físico de los sectores periféricos de la ciudad de Québec en Canada (Moretti & Vachon, 2005). Ambos estudios fueron conducidos por el Grupo Interdisciplinario de Investigación de los Suburbios (GIRBa_ *Groupe interdisciplinaire de recherche sur les banlieues*). Esta investigación cualitativa explora la relación entre la dispersión urbana y la movilidad de 30 adolescentes cuya edad se sitúa entre los 12 y 18 años, y que viven en seis territorios extraurbanos localizados en el Área Metropolitana de Quebec. Los resultados hacen énfasis en la fuerte dependencia de los adolescentes a la compañía de sus padres u otros adultos par ir y venir a cualquier parte, para la mayoría de estos adolescentes el transporte público está ausente o es deficiente, ellos consideran que el uso de la bicicleta es peligroso, y caminar es ineficiente. Los adolescentes pasan varias horas por semana sentados en el autobús escolar o en la parte posterior del automóvil de sus padres. Los resultados sugieren una dependencia del adolescente hacia el adulto y un potencial estilo de vida sedentario. Esto último, con posibles impactos en la salud de los adolescentes y en el desarrollo socio-afectivo de los mismos.

Introduction

Quebec City, like many other Canadian and North American cities, is a sprawling metropolitan territory. Nevertheless, demographic stagnation is expected around 2011. Until the 1970s, urban sprawl was generally linked to baby-boomers' important housing needs and to the expansion of inner-city neighborhoods. In the last ten years, it has reached rural areas following quite different processes and with various physical, social and environmental effects. Even though this exurban expansion has largely been criticized, it is nonetheless very successful with households in search of a safe, quiet and 'natural' haven to raise children. These exurban developments are made accessible by an extended network of highways, as are their services set in big box retailing areas. Indeed, the members of a typical exurban household work, shop, study and entertain in various places that are not only generally far from the home but are also located in different parts of the metropolitan area.

Since the morphology and planning of exurban territories make it extremely difficult for most residents to walk, bike or have access to reliable public transportation, this segmented territory is made coherent

through its users' auto-mobility. Hence, as Dupuy (2000) put it, the concept of auto-mobility stems from a *one person - one car* philosophy akin to car dependency which contributes to the characterization of exurbia. Yet if car dependency does not seem to bother adults living in exurban territories, what does it mean for teenagers who do not yet have a driver's license? Is the quest for more independence and autonomy limited by teens' restricted territorial mobility? What are the impacts of car dependency on teenagers' physical health, as well as cognitive and socio-affective development?

It is in this context that this article explores the links between urban sprawl and territorial mobility in an effort to understand teenagers' territorial mobility patterns, their relative autonomy during daily activities, as well as their perception and appreciation of various transportation modes, of the city and of their neighborhood.

Adolescence, mobility and the quest for autonomy

The quest for independence and autonomy is mandatory throughout adolescence. In addition, socialization with peers becomes an important part of teenagers' life: « *In meeting and choosing their friends, adolescents obviously acquire autonomy from the family. This relative autonomy of sociability is undoubtedly what differentiates adolescence from childhood* » (authors' translation, Bruno, 2000: 24). A new state of mind forms as soon as claims for more independence occur and a need for autonomy affirms itself (Fize, 1998). Teenagers need movement, autonomy and space in which to express their desire to go out with friends, to meet in places outside the home and be free of parents' supervision (Palmonari & Speltini, 1994). A main stake in this 'autonomization' process from parents and adults in general revolves around teenagers' mobility (Buffet, 2003).

If several disciplines are interested in adolescence as one of life's key developmental periods, research on teenagers' mobility in relationship to the built environment is not that common (McMillan, 2005). Moreover, the studies dominantly focus on teenagers living in inner city, few of them being conducted in suburban or rural locations. One possible reason for this might be the stereotyped vision of countryside as the idyllic place to raise children (Nairn, Panelli, & McCormack, 2003; Valentine, 1997, quoted by Travlou, 2003). A review of the literature on the subject made it

possible to identify teens' and their parents' perception and behavior with regards to mobility. Personal, spatial and functional factors influencing teenagers' mobility patterns were also identified. Thus, mobility can refer to two more specific types: 1) *dependent mobility*, which calls for teens to be accompanied by an adult in the car for their transportation; 2) *independent mobility*, understood as going about without being 'escorted' by an adult or parent.

Several personal dimensions were found to influence the level of independence in teenagers' mobility, **age** and **gender** being two of them. Boys are said to have a more independent mobility compared to girls but both groups acquire more autonomy with age (De Singly, 2002; Heurlin-Norinder, 2003; O'Brien, Jones, Sloan & Rustin, 2000; Prezza, Pilloni, Morabito, Sersante, Alparone & Giuliani, 2001; Tranter & Pawson, 2001). De Singly (2002), when conducting a study in urban France, found that even though parents recognize more maturity in girls, however they limit their freedom more than they actually do for boys. Tranter & Pawson (2001) found that girls living in Christchurch, New Zealand, limited their mobility because of their fear to be sexually assaulted, perpetrating the perception of danger among young women. Buffet (2003) found that in poor public housing suburbs located in the Rhône-Alpes region in Paris, the autonomy of teen girls does not grow with age. According to the interviewed teens, parents increase restrictions in order to control their sexuality.

Some physical dimensions of the neighborhood also influence teens' level of autonomy in their mobility. **Spaces located near the home** (such as the backyard) are where children can first go independently of their parents (Buffet, 2003). The space to learn about autonomy then extends to **nearby streets** and to the **itinerary to school** (De Singly, 2002). **Public spaces**, *formal* - like parks and sport fields - and *informal* - like streets, wooded areas and parking lots - are truly appreciated by teenagers who can use them for games, sports and socialization, independently of parental supervision (Elsly, 2004; Heurlin-Norinder, 2003; Nairn *et al*, 2003; Prezza *et al*, 2001; Sjolie & Thuen, 2002). Teenagers sometimes feel excluded in public spaces like in a few reported cases in London (Hillmann, 1999; O'Brien *et al*, 2000) where teens were made to feel unwelcome by adults' attitudes and behaviors towards them. In addition, some parents might restrict access to public spaces because they are

worried about aggressions and possible traffic accidents. Teenagers come to share the same fears as their parents' and consequently limit their own mobility (Elsley, 2004; Hillmann, 1999; O'Brien *et al*, 2000).

The **territorial dispersion of services, institutions and amenities** has also been identified as a factor that influences teenagers' level of independence in their mobility (Baudelle, Darris, Ollivro & Pihan, 2004; Fotel & Thomsen, 2004; Hillmann, 1999; Tranter & Pawson, 2001). In fact, the proximity of equipments, especially schools, encourages independent mobility (Hillmann, 1999; Sjolie & Thuen, 2002). This being said, the choice of the 'best' school for their children without regard for its location in relationship to the dwelling might influence the mobility patterns of the entire family since daily adult-accompanied vehicular trips could become necessary (Tranter & Pawson, 2001). This helped explain the choice of private schools located quite a distance away from the residences in France (De Singly, 2002). Similarly, the closing of rural public schools in Denmark has led parents to accompany their teenagers to a school located further from home (Fotel & Thomsen, 2004).

Another fundamental factor to understanding the independence level of teenagers in their daily mobility is the **increase in the level of household motorization and the expansion of the street network**. Indeed, independent mobility decreases as the number of cars in the household increases (De Singly, 2002; Hilal & Sencebe, 2002; O'Brien *et al*, 2000). A U.S. national survey of household daily travels in rural and urban United States revealed that the car is the dominant means of transportation throughout the country. However, its use is slightly more important in rural areas because of the scarcity of public transportation, added to the distances to cover which are too long to walk or bike (Pucher & Renne, 2004). On the contrary, Sandqvist (2002) found that teenagers living in the center of Stockholm, which is well served by public transportation, had a high level of autonomy in their mobility, independently of the fact that their parents owned a car or not. **Access to public transportation**, as well as parents' positive **perception of public transportation**, were also found to be associated with teenagers' more independent travel in some urban areas of Germany (O'Brien *et al*, 2000; Sandqvist, 2002; Tranter & Pawson, 2001). In urban France, De Singly (2002) found that some parents restricted their teenagers from taking public transportation. This was also the case in Christchurch, New Zealand, but was more associated

with the poor **quality and reliability of the public transportation** and/or its high cost (Pucher & Renne, 2004; Tranter & Pawson, 2001).

The **possibility for teenagers to bike** was also found to be a strong indicator of their independent mobility. Even though biking is very much appreciated by teenagers, some parents are authorizing it for leisure purposes but not for utilitarian uses for fear of traffic (De Singly, 2002; Fotel & Thomsen, 2004; Hillmann, 1999). This was not the case in Christchurch where drivers were found to be more sensitive to bikers' safety since biking is very popular among the population in general (Tranter & Pawson, 2001). Sjolie & Thuen (2002) compared the trips to schools and for leisure of teenagers living in Norway's urban and rural areas. Even though both areas enjoyed good networks of bicycle paths, teenagers spent more time doing sedentary activities like watching television or using a computer, and had a mobility that was dependent from parental accompaniment.

The **efficiency of walking** as a mode of transportation was also found to influence teenagers' independence. In this respect, the **proximity of institutions, amenities and services** to the home encourages teenagers to walk. Studies by Pucher & Renne (2004) in the U.S., and by Sjolie & Thuen (2002) in Norway, have demonstrated that for teens, urban areas are environments better suited for walking than rural ones. **Road safety** and the **perception of danger** (to be hit by a car, for instance) both influence teenagers' propensity to walk. Indeed, the **perception of danger** and the **feeling of insecurity** expressed by parents and teenagers influence the decision to walk (Fotel & Thomsen, 2004; Hillmann, 1999; Prezza *et al*, 2001). Ugly and abandoned sectors trigger the necessity for accompanied trips (Elsly, 2004) while, conversely, familiar environments encourage independent mobility (Sandqvist, 2002). This being said, walking among teenagers is decreasing (Hillman, 1999; O'Brien *et al*, 2000).

Finally, teenagers' level of independent mobility was found to be influenced by **cultural values**, as showed by Tranter & Pawson (2001). They compared teens' level of independence to access places in their local environment in seven different cities from four countries (New-Zealand, Australia, Germany and United Kingdom). The authors found the level of freedom to be relatively high in Germany compared to the three other countries. They attributed this difference to adults' collective sense

of responsibility toward children in general, as well as to an extensive use of outdoor public spaces.

The reviewed studies on teenagers' mobility and its relative independence from adult accompaniment suggest that: The daily mobility of exurban teenagers living in exurban territories at the outskirts of Quebec City's metropolitan area should be dominantly dependent of vehicular accompaniment by an adult because, namely, of the dispersion of institutions, services and amenities, the long distances to access them, as well as the absence or poor quality of public transportation.

Methodology

This qualitative research is motivated by a desire to grasp the complexity of teenagers' daily lives and of the built environment they live in, but also to understand the meanings these teens give to their actions as well as the perception of their surroundings. The semi-structured interviews with 30 teens were conducted in the summer of 2005.² The questionnaire covered the following themes: daily mobility (activities, duration, location, transportation mode, trip duration and appreciation and accompaniment), perception and uses of different places located near the house or in the city, activities performed at home (Internet, television, video games and duration of the activities) and finally, perception and uses of various transportation modes (walking, biking, car, school bus, city bus, etc.). The interviews took place in the house and were recorded.³ In only one case the mother was present with her teen during the interview. Each lasted about 75 minutes.

Participants

The 30 teenagers interviewed were between 12 and 18 years of age. There were 21 girls and 9 boys from 20 families.⁴ Except for one girl who was an only child, all teens had siblings. Three teens lived in recomposed

² A first version of the questionnaire was pre-tested with the collaboration of 13 teenagers. Some items were eliminated or replaced, other were rephrased to be fully understandable to all teenagers.

³ A door-to-door operation allowed interviewers to explain to parents and their teen(s) the nature of the study. Each teen's participation was voluntary with the consent of a parent.

⁴ These interviews are part of a broader survey of exurban residents where 130 adults from 130 households were interviewed. Among the 30 households in which interviews with teenagers took place, 12 interviews were also conducted separately with one parent.

families. The teenagers interviewed all lived in single-family detached houses located in six growing exurban residential developments of which three were located near lakes, mountains or forest, and three were set among agricultural and river plains. In total, 27 teens attended high school and two went to CEGEP⁵. A single teen, aged 17, with similar mobility habits compared to his peers, had a regular job and did not attend school anymore. Among all of the schools, 19 were public and 10 were private institutions. One of this sample's singularities is the over-representation of motorized households. The 20 households in which lived the 30 interviewed teens owned a total of 69 vehicles, which represent an average of three cars per family. This is far from surprising considering that 21 of the 30 teens mentioned that their exurban residential area is only rarely or not at all covered by the city's public transportation network.

Data analysis

Recording the interviews made it always possible to go back for more information, including verbal and non-verbal signs (such as pauses or changing tones of voice) (Deslauriers, 1991). Discourse analysis software N'Vivo was used to structure data as well as concepts into themes and categories. The data analysis process included two phases (Tesch, 1990, in Savoie-Zajc, 2000):

1. A '*decontextualization*' of data in order to discern one or more cohesive themes. The idea is to identify common denominators and attribute a few codes (coding).
2. A '*recontextualization*' that consists in grouping the themes and categorizing the codes so that trends can emerge (Savoie-Zajc, 2000: 102).

Coding was used to attribute sense and meaning to parts of the transcribed interviews (Lux, 2001). With N'Vivo, we then proceeded to a classification with a structure of '*Tree Nodes*'. Our list of codes was organized in hierarchical levels of concepts, as identified in the literature review. It was then our job to interpret data with rigorous creativity. The

⁵ The postsecondary system in Quebec is unique in that colleges (CEGEP) provide a program that is a requirement for entry to university. Students who complete high school (normally after 11 years of schooling) must complete two years of a CEGEP's 'general program' (as opposed to 'vocational' programs also offered). Only then can they proceed to university.

results explore mobility and its representations among exurban teenagers with the ultimate goal of discussing trends rather than causal relations (Giordano, 2003; Poupart, 1997). The results are presented as « portraits » of typical situations in accordance with concepts identified in the literature.

Results

First, we analyzed and compared teens' daily transportation in order to characterize different types of mobility in function of their: 1) residential location and setting, 2) gender and age, 3) attendance to a public or a private school, 4) length and duration of trip between house and school, 5) appreciation of the trip to school in the car and/or in the school bus, and 6) perception of different transportation modes. This analysis yielded several general conclusions:

1. Exurban teenagers were strongly dependent upon adults for transportation.
2. They spent an enormous amount of time either in a car or in a school bus, on a daily basis.
3. They rarely walked or biked for utilitarian purposes.
4. They showed little interest in or did not use public transportation.
5. They spend much time planning their transportation strategy outside school hours.
6. They had relatively positive views of the city when associated with shopping and 'urbanity'.
7. They showed a strong desire for more freedom and autonomy.
8. They highly anticipated owning a car in the near future.

These general statements about exurban teenagers' mobility need however to be discussed while taking several variables into account. A first important distinction to be made is between exurban teenagers' mobility to and from school, and mobility away from school.

Our analysis indicates that teenagers' **mobility to and from school** is dependent either upon parents driving them (or sometimes another adult), upon the school bus or, sometimes, upon a combination of both (Table 1).

Table 1. Teenagers' Type of Mobility According to Transportation Modes Between House and School

Type of Mobility	Transportation modes between home and school	N
Dependent Mobility	1 Car	3
	2 School-bus	17
	3 Car and School-bus	4
Independent Mobility	1 Walk	3
Alternating	1 Car or Walk	1
Dependent and	2 Car or Bike	1
Independent Mobility	3 Car or City-bus	1
N		30

We looked for the commuting time between house and school. Comparing transportation modes and traveling time, we found that the majority of teens getting to school by bus spend beyond one hour, while those getting to school by car with their parents spend just over 30 minutes. Finally, the few who walk take less than 20 minutes to get to school. Five of the teenagers we talked to alternate between the school bus and the car. What is most evident is that teens driven to school by their parents cut their travel time by half compared to those using the bus. In that respect, teenagers mentioned that all the detours taken along the bus route to drop everyone closest to their home make the journey long and inefficient, thus ensuring that driving was far more popular than taking the bus (Tables 2, 3, 4 and 5).

Table 2. Daily School Bus Traveling Time Between House and School for 21 Teenagers

Transportation mode	Daily Traveling Time (minutes)			N
	$25 \leq t \leq 60$ mn	$60 < t \leq 120$ mn	$120 < t \leq 160$ mn	
School-bus	5	13	3	21

Table 3. Daily Car Traveling Time Between House and School for Ten Teenagers

Transportation mode	Daily Traveling Time (minutes)			N
	$t \leq 30$ mn	$30 < t \leq 60$ mn	$t > 60$ mn	
Car	2	7	1	10

Table 4. Daily Walking, Biking or Public Bus Traveling Time Between House and School for Six Teenagers

Transportation mode	Daily Traveling Time (minutes)			
	t < 20 m	60 m	110 m	N
Walk	3	1	N/A	4
Bike	N/A	N/A	1	1
City-bus	N/A	1	N/A	1

Table 5. Comparison of Car Daily Traveling Time Between House and School with other Transportation Mode for Seven Teenagers

Participant	Transportation modes					△
	Car	School-bus	Walk	Bike	Public bus	
1	60	N/A	N/A	110	N/A	-50 mn
2	44	80	N/A	N/A	N/A	-36 mn
3	50	105	N/A	N/A	N/A	-55 mn
4	50	N/A	N/A	N/A	60	-10 mn
5	60	120	N/A	N/A	N/A	-60 mn
6	4	N/A	60	N/A	N/A	-56 mn
7	20	46	N/A	N/A	N/A	-26 mn

Our teenagers had to qualify their trip to school using four ten-point semantic scales, fun/boring, short/long, calm/stressing, safe/dangerous, explaining each time what justified their rating. Most evaluations of car trips are rather positive. In general, teens find it fun, calm, short and safe: it is therefore considered to be '*substance-time*', as put forward by Amar (2004) in contrast with '*distance-time*'. A few consider their trips to be unsafe or stressful, because of the behaviors of other conductors and of the traffic, without making any link to their parents' driving. The evaluations of the school bus journey are ambiguous and very much linked to the behaviors of other passengers and of the driver. Sometimes it's fun, sometimes it's boring; sometimes it's stressing, sometimes it's calm, depending of the driver and of other teens' behaviors. If the teenager 'buses' with a friend, time is then perceived as shorter (*substance-time*); for the lone teenager, however, the trip takes long and is boring (*distance-time*). In terms of safety, some bus drivers are considered dangerous; the fear of traffic and of other drivers' behaviors is not mentioned in this case.

Regarding teenagers' **mobility away from school**, we found that the dispersion of various destinations, equipments, amenities and residential areas across the Quebec City metropolitan area generates distances that

can only be efficiently tackled by car. In fact, the majority of teens interviewed (26 out of 30 teens) considered it impossible to live in exurbia without factoring in the use of a car to make their daily trips. This car dependency is naturally amplified during the winter when walking and biking in the cold become difficult, while the proximity of shops and sports facilities around the house or the school encouraged walking or biking.

Myriam and Clara are among those whose mobility is entirely dependent upon being driven by their parents.

I guess I could [do without] but I'd be bored. Because [my parents] will always give me lifts. If I can't get a lift, I can't do anything really.

(Myriam, 14)

Well, it depends on my parents. If they're not willing to drop me somewhere or to come and get me, I'm stuck home.

(Clara, 15)

Sophie says she can get by without her parents driving her. On the other hand, she has to 'bum lifts' from other people.

Well I can always manage to get a lift from someone [other than parents]. That can always be arranged. [...] In the winter, though, it's harder because I can't use my bike. Then again, I can always get a lift.

(Sophie, 15)

Table 6. Favourite Computer Activities as Ranked by the 30 Surveyed Teenagers.

Computer Activity	Ranking			Total Score
	1st	2nd	3rd	
Chat with friends	13	5	4	22
Do school work	7	5	7	19
Send e-mails	2	6	8	16
Play games on the Net	4	7	2	13
Do personal research	0	5	3	8
Play games on CD	4	1	3	8
Chat with strangers	0	0	0	0

Generally, the teens we interviewed seemed satisfied with the various residential areas they lived in, especially regarding their two main qualities: quiet and close to nature. However, they felt somewhat isolated because of their dependent mobility. Internet, and the « virtual » mobility it

affords, reduces the isolation since nowadays there only needs be «a button to push in order to dissolve all territories, thereby abolishing the opposition between near and far, between movement and stability, between inside and outside.» (authors' translation, Urry & Sheller, 2004: 35). Thus it is not surprising that 'chatting' with friends is a favored activity among these teens (see Table 6). In spite of geographical distances, they nevertheless maintain their social network.

Another important step in our analysis was to look for factors that could influence teenagers' more or less dependent mobility, as identified in the reviewed studies. When we first compared the six exurban territories and settings under study to check for a **residential location** effect, no differences were found between teenagers' level of dependence upon adults for their mobility. Quite simply, their dependency seems to be due to the long distances between house and school. Only a few teens whose school was located within a 20-minutes walk from their house were able to go by foot, independently from their parents or even the school bus. These results confirm those of Bradshaw (1995) and Di Guiseppi, Carolyn, Roberts, Li & Allen (1998) as reported by McMillan (2005) in her literature review. Their own results demonstrate that the longer the distances between home and school, the less inclined teenagers are to walk or bike to get there.

With regard to **gender**, according to several studies (Buffet, 2003; De Singly, 2002; Heurlin-Norinder, 2003; O'Brien *et al*, 2000; Prezza *et al*, 2001; Tranter & Pawson, 2001), boys generally are more independent than girls when it comes to mobility. However, our study does not show any indication of this. Boys were as dependent upon their parents or the school bus for their daily journeys as were girls (See Table 7).

Table 7. Teenagers' Mobility Type and Transportation Mode(s) According to their Gender

Type of mobility	Transportation mode			
	between home and school	Girls	Boys	N
Dependent Mobility	1 Car	1	2	3
	2 School-bus	13	4	17
	3 Car or School-bus	3	1	4
Independent Mobility	1 Walk	2	1	3
Alternate Dependent and Independent Mobility	1 Car or Walk	1	0	1
	2 Car or Bike	0	1	1
	3 Car or City-bus	1	0	1
	N	21	9	30

As for their age, we were expecting older teens to be more independent in their territorial mobility, as five of the research cited had demonstrated (De Singly 2002; Heurlin-Norinder, 2003; O'Brien et al, 2000; Prezza et al, 2001; Tranter & Pawson, 2001). Again, our results do not match these findings. Older teens were as dependent from an adult or the school bus for their mobility as were their younger counterparts. Ironically, the two younger teens from our sample (12 and 13 years old) were the only ones walking to school, because of the proximity of their school to their house (See Table 8).

Table 8. Teenagers' Mobility Type and Transportation Mode(s) According to their Age

Type of Mobility	Transportation mode between home and school	Age							N
		12	13	14	15	16	17	18	
Dependent Mobility	1 Car	0	1	0	0	0	2	0	3
	2 School-bus	3	3	5	3	1	2	0	17
	3 Car or School-bus	1	0	1	2	0	0	0	4
Independent Mobility	1 Walk	2	1	0	0	0	0	0	3
Alternating	1 Car or Walk	1	0	0	0	0	0	0	1
Dependent and Independent	2 Car or Bike	0	0	1	0	0	0	0	1
Mobility	3 Car or City-bus	0	0	0	0	0	0	1	1
N		7	5	7	5	1	4	1	30

According to De Singly (2002), teenagers attending **private or public schools** will experience different levels of autonomy in their mobility, private-school teens being more dependent upon their parents to be driven to school. This is due to the shear distance between house and school, but also to the rarity of a bus service. Again, our findings do not corroborate these conclusions since the majority of the teenagers we met who attend a public school are as dependent upon being accompanied by an adult as are the teens attending a private school (See Table 9). In the case of Quebec City, this could be explained by the remote location of the closest public schools from most residential developments, but also by the power given to parents to chose a public high school in accordance with a specialized academic program (in sports, music or the arts), anywhere in the metropolitan area.

Table 9. Teenagers' Mobility Type and Transportation Mode(s) According to their Frequentation of a Public or Private School

Type of Mobility	Transportation mode between home and school	Public School			N
		Public School	Private School	Working	
Dependent Mobility	1 Car	1	1	1	3
	2 School-bus	10	7	0	17
	3 Car or School-bus	2	2	0	4
Independent Mobility	1 Walk	3	0	0	3
Alternating	1 Car or Walk	1	0	0	1
Dependent and Independent	2 Car or Bike	1	0	0	1
Mobility	3 Car or City-bus	1	0	0	1
N		19	10	1	30

Some of the reviewed studies indicate that if an area is well served by **public transportation**, teenagers' independent mobility is greater and allows them to explore more of the city's territory, although research on rural settings advances that public transportation's low quality and frequency discourage teenagers' use on a regular basis (Pucher & Renne, 2004; Tranter & Pawson, 2001). In the case of Quebec City, few teens use public buses either because there is no such service, it is unreliable or their parents never use it. We found that even though some areas offered public transportation, the teens' journey to school is as dependent upon an adult or the school bus as it is for kids living in sectors with no public transportation at all (see Table 10).

Table 10. Teenagers' Mobility Type and Transportation Mode(s) According to the Service Road of Their Residential District by Public Buses.

Type of Mobility	Transportation mode between home and school	Scarcity of public buses			N
		Public bus service	public buses	No public buses	
Dependent Mobility	1 Car	1	0	2	3
	2 School-bus	5	3	9	17
	3 Car or School-bus	0	2	2	4
Independent Mobility	1 Walk	1	0	2	3
Alternating	1 Car or Walk	1	0	0	1
Dependent and Independent	2 Car or Bike	0	0	1	1
Mobility	3 Car or City-bus	1	0	0	1
N		9	5	16	30

Finally, our analysis looked for exurban teenagers' perception of transportation modes. If French youths dream of a scooter to solve a restricted mobility and gain independence from parents (De Singly, 2002), Quebec's teenagers would rather have their own car or at least have access to one. Getting one's driver's license is seen as a ritual symbolizing the passage towards a more autonomous adult life. Most teens are conscious that it is difficult and maybe impossible to go about their daily activities without a car. The automobile is an integral part of their lifestyle and they are anxious to drive themselves. Knowing how mobility habits are hard to modify at an older age (Bradshaw, 2001; reported by McMillan, 2005), one can expect that generations of teenagers will perpetuate the auto-dependent lifestyle of their parents. In this respect, they might even be less inclined to use alternative transportation modes. Indeed, we found that even though the teenagers we met were very articulate about environmental problems (much more so than the adults living in the same neighborhoods), they were proposing all types of solutions to make cars cleaner without questioning their car dependency in itself.

Clara and Tim's perception of having access to a car is telling:

To go anywhere, whenever we want... Right now, I feel I can never go anywhere I want, when I choose to. I'm fed up!

(Clara, 15)

[...] It's about freedom, in fact. No need to wait for the bus, no need to get organized and get lifts or to pay for them when it's a friend, for instance. This way I don't have to wait and take detours to go by this guy's house before I'm dropped somewhere.

(Tim, 17)

Using public transportation, although seen as practical by most teenagers (even those not using it), was not seen as a valid option for independence. If it was perceived as a potential space for socialization, several saw that negatively, worried about their proximity to strangers. Depeau (2001), reporting findings from spatial cognition research, suggests that children with a limited experience of their environment will most probably have a limited mental representation of the city where they live, which could lead to a feeling of insecurity (Lynch, 1967; Spencer,

Blades & Morsley, 1989). Is the fear expressed by some teenagers toward public transportation simply due to their limited experience of the city, which is essentially filtered by their trips to school in the bus or their parents' car?

Claudia lives in an area without a city bus service. According to her, public transportation would make her more autonomous and less dependant upon her parents for her mobility.

They take us wherever we want to go even though they're not required to. Yet they never « whine » about it.

(Claudia, 14)

The city bus goes through Emily's neighborhood but she does not use it because of her fear of other users.

I don't like taking the bus. If I'm forced to take it, I'd rather stay home. Being alone with people I don't know... Not that I'm scared of everything. I suppose I could go with someone I know, but I still don't feel safe. I've never been to town on the bus. I took the bus on vacation because it was the only choice to get anywhere. But over here, I've never used it, even to go to Quebec City.

(Emily, 17)

Although all surveyed teenagers had access to a bicycle, **biking** was not seen as a solution for their lack of independent mobility. Even though biking was valued by most of them, very few used their bike for utilitarian purposes (running errands, go to activities, etc.). Teenagers talked about the long distance they would have to bike, of winter conditions, as well as of barriers such as highways that make it difficult to access some places efficiently.

Walking was neither perceived as a solution to gain independence from parents. Half teenagers said they rarely or never walk for utilitarian purposes. The remoteness of their house and the inefficiency of the street system to get somewhere were the main reasons for not walking, followed by the availability of faster modes of transportation. These results corroborate those of Pucher & Renne (2004) and Sjolie & Thuen (2002) who found, in their respective studies of American and Norwegian rural environments, that the more remote the house is, the less probable people will walk.

David walks and uses his bicycle only part of the year when the temperature permits. Otherwise, he has to be driven around by an adult.

I don't use my bike in the winter when I'd rather go by car... especially when it's cold. It's no fun walking when it's 30 degrees below.

(David, 13)

Carole, like most of the other teens interviewed, thinks that long distances discourage her to walk.

I love cycling. As for walking, I just can't. [...] I never walk. Everything's just too far. I can't even go to the grocery store. That would take me for ever.

(Carol, 18)

Discussion

Choosing to live in exurbia generally means to have a limited access to proximity retail and services, to be far from institutions, equipments and services, and to have long distances to drive on a daily basis. Our survey indicates that the dependent mobility of most teenagers is associated with the territorial morphology and land use of their residential location. The mobility of teenagers in one specific location, as well as around some schools, indicates that the proximity of commercial activities (corner stores, drug stores, video stores, etc.) as well as of sports fields (ski resorts, etc.) favored an independent mobility through walking and biking. Sometimes, the school environment allowed for autonomous mobility on lunch hours because of shops' proximity. Distance is a fundamental issue when it comes to choosing an active mode of transportation. This being said, harsh winters in Quebec cannot be underestimated in their impact on walking and biking (snow, cold, etc.). In fact, some teenagers are taking advantage of good weather conditions during half of the year while becoming most dependent on their parents in wintertime. As for public transportation, parental use of it is the best indicator of teenagers' intention to do the same. Exurban teens see the automobile is *the* solution to their lack of independence in mobility. Fast and comfortable, car-dependency affords freedom as well as 'independence'.

Our findings certainly illustrate a paradox when we take into account the parents' choice of an exurban residential location and its impact on

the location of kids' school and socio-cultural activities. On the one hand, their residential choice seems to be motivated by a will to provide their children with 'health capital' (quietness, pure air and proximity to nature) and 'social capital' (social status, presence of young children). On the other hand, a desire to provide their children with 'cultural capital' seems to motivate the choice of a specific private or public school with specialized programs, as well as of structured associative sport or cultural activities. This double choice induces extensive dependent car traveling, desynchronizes family members spatiotemporal schedules, and limits the possibilities for spontaneous socialization among other teens and non-family adults, which is known to contribute to their psycho-social development. In addition, this car-dependent lifestyle could potentially increase the risk of being sedentary with well-known consequences for children's health (Björklid, 2002, reported by Fotel & Thomsen, 2004; Hillman, 1999). Indeed, a sedentary child stands more chance of becoming a sedentary teen and later on a sedentary adult potentially suffering from different associated chronic diseases (Hume, Salmon & Ball, 2005; McMillan, 2005; Magelund, 2001, reported by Nodgaard, 2002).

Our study asks fundamental questions: Is there a link between urban form and teenagers' levels of independent physical and social activities? Are urban, suburban and exurban neighborhoods offering different opportunities? Do urban teenagers walk more for utilitarian purposes than their suburban and exurban counterparts? Do exurban teenagers compensate their lack of active transportation by more structured activities? To what extent is virtual mobility more popular among exurban teenagers? This modest qualitative research, without any intention of generalization, suggests that the link between urban form and teenagers' health and development deserves to be better understood and investigated. Research on the social sustainability of urban sprawl is certainly to be continued.

References

- Amar, G. (2004). Notes sur la mobilité à l'âge du signe. In D. Kaplan & H. Lafont (dirs.), *Mobilités.net: Villes, transports, technologies face aux nouvelles mobilités* (pp. 37-44). Paris : FING-RATP.
- Bachiri, N. (2006). *Étalement urbain et mobilité quotidienne d'adolescentes et d'adolescents de secteurs rurbains de la communauté métropolitaine de Québec*. Master's Thesis, École d'architecture, Université Laval, Québec.

- Baudelle, G.; Darris, G.; Ollivro, J. & Pihan, J. (2004). Les conséquences d'un choix résidentiel périurbain sur la mobilité: pratiques et représentations des ménages. *Cybergeog: Revue européenne de géographie*, 287, 15 octobre 2004, GT23, 1-17.
- Bruno, P. (2000). *Existe-t-il une culture adolescente?* Paris: In Press.
- Buffet, L. (2003). La mobilité dans l'espace urbain des jeunes des quartiers défavorisés, un révélateur d'inégalités pour l'insertion dans la société? Communication présentée aux *Premières rencontres jeunes et sociétés en Europe et autour de la Méditerranée*, Marseille 22- 24 octobre.
- Depeau, S. (2001). Urban Identities and Social Interaction: A cross-cultural analysis of young people's spatial mobility in Paris, France, and Frankston, Australia. *Local Environment*, 6(1), 81-86.
- De Singly, F. (2002). La liberté de circulation: Un droit aussi de la jeunesse. *Recherche et prévisions*, 67, 21-36.
- Deslauriers, J-P. (1991). *Recherche qualitative. Guide pratique*. Montréal: McGraw-Hill.
- Dupuy, G. (2000). Automobilité : Quelles relations à l'espace? In M. Bonnet & D. Desjeux (dirs.), *Les territoires de la mobilité* (p. 37). Presse Universitaire de France.
- Elsley, S. (2004). Outsiders! Children and young people and their use of public space. Open space: People space, an international conference on inclusive outdoor environments (27-29 October, Edinburgh), Conference theme: *Space to grow/young people*. (<<http://www.openspace.eca.ac.uk/conference/Proceedings/PDF/Elsley.pdf>> 15/04/2005).
- Fotel, T. & Thomsen, T.-U. (2004). The Surveillance of Children's Mobility. *Surveillance & Society*, 1(4), 535-554.
- Fize, M. (1998). *Adolescence en crise ? Vers le droit à la reconnaissance sociale*. France : Hachette Éducation.
- Giordano, Y. (2003). Les spécificités des recherches qualitatives. In G. Charreaux, P. Joffre & Koenig, G. (dirs.), *Conduire un projet de recherche, une perspective qualitative* (pp. 11-26). France: EMS management et société.
- Heurlin-Norinder, M. (2003). Accessibility or obstacles? Children's independent mobility and valuation of the outdoor environment. In G. Moser, E. Pol, Y. Bernard, M. Bonnes, J.-A. Corraliza & Giuliani, V. (Ed.), *People, Places, and Sustainability* (pp. 161-173). Toronto: Hogrefe & Huber.
- Hilal, M. & Sencebe, Y. (2002). Mobilités quotidiennes et urbanité suburbaine : Espaces modes d'emploi. *Espaces et sociétés*, 108/109, 133-153.
- Hillman, M. (1999). *The impact of transport policy on children's development*, Canterbury safe routes to schools project seminar Canterbury, Christ Church University College, 29 May (< <http://www.spokeseastkent.org.uk/mayer.htm> > 21/02/2005).
- Hume, C.; Salmon, J. & Ball, K. (2005). Children's perceptions of their home and neighbourhood environments, and their association with objectively measured physical activity: a qualitative and quantitative study. *Health Education Research*, 20(1), 1-15.
- Lux, L. (2001). *Guide d'introduction au logiciel Nud.ist N'Vivo*. Laboratoire de recherches anthropologiques, Département d'anthropologie, Université Laval, Québec.
- Lynch, K. (1967). *L'image de la cité*. Paris, Dunod, 222 p.
- McMillan, T.-E. (2005). Urban form and a child's trip to school: The current literature and a framework for future research. *Journal of Planning Literature*, 19(4), 440-456.

- Moretti, GP. & Vachon, G. (dirs.). (2005). *Morphologie du cadre bâti de la couronne périurbaine de Québec*. Research report, Communauté métropolitaine de Québec (CMQ), Québec.
- Nairn, K.; Panelli, R. & McCormack, J. (2003). Destabilizing dualisms: Young people's experiences of rural and urban environments. *Childhood*, 10(1), 09-42.
- Nodgaard, T. (2002). *Children's everyday mobility and welfare with a focus on parental escorting*. Doctoral thesis. Denmark : Roskilde University.
- O'Brien, M.; Jones, D.; Sloan, D. & Rustin, M. (2000). Children's Independent Spatial Mobility in the Urban Public Realm. *Childhood*, 7(3), 257-277.
- Palmonari, A. & Speltini, G. (1994). Aspects psychosociaux de la préadolescence. In M. Bolognini, B. Plancherel, R. Núñez & W. Bettschart (dirs.), *Préadolescence, théorie, recherche et clinique* (pp. 35-44). Paris : ESF.
- Poupart, J. (1997). L'entretien de type qualitatif: Considérations épistémologiques, théoriques et méthodologiques. In J. Poupart, J-P. Deslauriers, L. H. Groulx, A. Laperrrière, R. Mayer & A. Pires (dirs.), *La recherche qualitative: enjeux épistémologiques et méthodologiques* (pp. 173-209). Montréal: Gaëtan Morin.
- Prezza, M.; Pilloni, S.; Morabito, C.; Sersante, C.; Alparone, F-R. & Giuliani, M.-V. (2001). The influence of psychosocial and environmental factors on children's independent mobility and relationship to peer frequentation. *Journal of Community and Applied Social Psychology*, 11, 435-450.
- Pucher, J. & Renne, J.-L. (2004). Urban-rural differences in mobility and mode choice. 2001 *National Household Travel Survey, April 2004*, 1-22.
- Sandqvist, K. (2002). How does a family car matter? Leisure, travel & attitudes of adolescents in inner city Stockholm. *World Transport Policy & Practice*, 8(1), 11-18.
- Savoie-Zajc, L. (2000). L'analyse de données qualitatives: Pratiques traditionnelle et assistée par le logiciel NUD.IST. *Recherche qualitatives*, 21, 99-123.
- Sjolie, N. & Thuen, F. (2002). School journeys and leisure activities in rural and urban adolescents in Norway. *Health Promotion International*, 17(1), 21-30.
- Spencer, C.; Blades, M. & Morsley, K. (1989). *The Child in the Physical Environment: the development of spatial knowledge and cognition*. New York: Wiley.
- Tranter, P. & Pawson, E. (2001). Children's access to local environments: a case-study of Christchurch, New Zealand. *Local Environment*, 6(1), 27-48.
- Travlou, P. (2003). Teenagers and Public Space. Literature review. *OPENspace Research centre* (<<http://www.openspace.eca.ac.uk/rtf/TeenagersLitRev.rtf>> 05/11/2005).
- Urry, J. & Sheller, M. (2004). Le nouveau paradigme de la mobilité. In D. Kaplan & H. Lafont (dirs.), *Mobilités.net : Villes, transports, technologies face aux nouvelles mobilités* (pp. 30-36). Paris: FING-RATP.