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Urban and suburban children's experiences with school travel – A case study

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ABSTRACT

Purpose: Physical activity is strongly correlated with children's health, and increasing rates of active school travel (AST) among children may well enhance their overall physical activity levels. Neighbourhood type may influence children's school travel modes; however, few qualitative studies have examined children's experiences of school travel across neighbourhood types. This paper explores urban and suburban children's experiences with AST and outlines perceived barriers and facilitators.

Methods: In spring 2014 and 2015, 42 elementary-school children (aged 9–13; 40% female) from one school in an urban neighbourhood in Downtown Vancouver, British Columbia and two elementary schools in a suburban neighbourhood in Metro Vancouver, participated in semi-structured focus groups. Discussions focused on children's experiences of school travel. A four-stage framework analysis was used to categorize data into themes. Five overarching themes emerged from both urban and suburban environments which included: proximity, neighbourhood safety, traffic safety, parental support and peer relationships.

Conclusion: Urban and suburban children identified and described barriers and facilitators to AST. Barriers and facilitators were identified in both neighbourhood types. However, the extent to which these factors influenced school travel behaviour varied between neighbourhoods and between individuals. To overcome AST barriers, children in our study developed personal strategies, such as walking with a friend or being cautious in potentially dangerous areas. Involving children in school travel planning discussions and taking neighbourhood setting into account may better inform the development of travel planning programs and enhance their effectiveness.

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1. Introduction

Physical activity (PA) is a cornerstone of health at every age and is essential for primary prevention of chronic diseases. The seeds that promote positive behaviours (like physical activity) known to prevent adult chronic disease must be sown during childhood. Despite this, fewer than 10% of Canadians aged 6–19 years currently meet PA guidelines of $>$ 60 min/day of moderate-to-vigorous PA (Colley et al., 2011; Tremblay et al., 2010). As PA and sedentary time track from childhood to adulthood (Malina, 1996; Telama et al., 2005), the current generation of low active, sedentary Canadian children and youth are poised to become the inactive adults of tomorrow.

Active school travel (AST; e.g., walking or cycling) promotes overall health (Lubans et al., 2011) and is an invaluable source of children's incidental daily PA. We and others have shown that it contributes as much as 30% toward recommended daily levels of PA (van Sluijs et al., 2009; Voss et al., 2015). Children who use active transport to/from school tend to be more physically active compared with peers who do not (Faulkner et al., 2009; Lee et al., 2008). Unfortunately, children of today have been referred to as the 'backseat generation' (Karsten, 2005), as they are more frequently driven to school (Buliung et al., 2009) and their independent mobility has diminished (Fyhri et al., 2011).

The decision-making process towards a child's school travel mode is inherently complex (Panter et al., 2008). A child's perception of built and social environments play a role in whether or not children choose active modes of transport to/from school (Ahlport et al., 2008; Kirby and Inchley, 2009; Romero, 2010). For example, currently in North America neighbourhood design favours car travel over walking and cycling (Frank et al., 2004). Further, the amalgamation of local community schools into larger 'super schools' in the U.S. increased the distance that children must travel from home to school and back, each day (McDonald, 2007). Car prioritized neighbourhoods and schools located further from children's homes create challenges for choosing AST as a priority (Wong et al., 2011). Perception of neighbourhood safety is another important factor in parents' and children's decision to engage in AST (Janssen and LeBlanc, 2010). These and other factors influence parents' willingness to permit their children to engage in AST (Ahlport et al., 2008; Faulkner et al., 2010). Conversely, walkable urban centres (e.g. well-connected streets, presence of traffic-calming measures) better support AST (Gallimore et al., 2011; Saelens et al., 2003).

Neighbourhood design and perceptions of the built and social environment are firmly embedded within AST decisions with children comprising a central part of the AST decision-making landscape. However, to date, only two studies have explored *children's* perceptions of AST *across neighbourhood types* (Fusco et al., 2012; Mitchell et al., 2007). Their findings identified social interaction and the natural environment as facilitators of AST (Fusco et al., 2012); and traffic concerns (Fusco et al., 2012; Mitchell et al., 2007), fear of strangers and parent-imposed barriers (parent safety concerns) (Mitchell et al., 2007) as barriers to AST.

We seek to extend the current research and explore urban and suburban children's school travel experiences. School travel literature includes relatively few studies which explicitly focus on children's perspectives (Mitchell et al., 2007). Insights from a child's perspective as to what influences school travel behaviour seems essential to guide the development of more effective AST strategies, as studies have shown that children's perspectives can prove meaningful and insightful in health-related research (Fusco et al., 2012; Race et al., 2016; Sims-Gould et al., 2014).

A qualitative approach provides a means to effectively 'drill down' to identify factors that influence active travel behaviour. This approach has been valuable for garnering an in-depth understanding of AST (Clifton and Handy, 2001). Therefore, we adopted qualitative methods to describe the school travel experience of children who live in a highly walkable, downtown urban setting and those who live in less walkable suburban neighbourhoods in Metro Vancouver, Canada, by identifying perceived barriers and facilitators to AST.

2. Methods

2.1. Participants

We recruited a sub-sample of students in grades 4–7 from the larger *Active Streets, Active People-Junior (ASAP-Jr)* study (n = 573). *ASAP-Jr* is a school-based study that aims to assess whether targeted changes to the built environment positively influence child and youth health and to identify factors that limit or support PA and AST (Frazer et al., 2015; Mah et al., in press; Voss et al., 2015; Voss et al., 2014).

A subset of students from three elementary schools in Metro Vancouver, British Columbia were invited to participate in a series of lunch-time focus groups. One school was located in an urban neighbourhood (Vancouver's downtown); two schools were located in a suburban neighbourhood in Metro Vancouver (North Surrey). Ninety-nine students were invited to participate; of these 44 provided parental consent/assent. In total, 42 children (24 boys, 18 girls) participated in focus groups (two students were absent on the day of their scheduled focus group; mean age 10.9 years, range 9–13 years). The University of British Columbia Behavioural Research Ethics Board and Vancouver and Surrey School Boards approved this study. Children's demographic data (i.e. name, birthdate, address) were drawn from consent forms completed by parents as part of the larger *ASAP-Jr.* study. To characterize familial demographics, information was collected from the larger *ASAP Jr.* study via a self-administered questionnaire by parents/guardians. Urban and suburban familial demographics are summarized in Table 1.

Table 1
Participants' familial characteristics by urban and suburban neighbourhood type.

Characteristics	Urban n=16		Suburban n=26	
	n	(%)	n	(%)
Family ethnicity				
Caucasian	8	(50.0)	4	(15.4)
Asian (East, South, Southeast)	6	(37.5)	13	(50.0)
Other	1	(6.3)	7	(26.9)
Mixed (Caucasian/Asian)	1	(6.2)	1	(3.8)
Missing data	0	(0)	1	(3.8)
Language spoken at home				
English	12	(75.0)	7	(26.9)
Language other than English	4	(12.5)	18	(69.2)
Missing data	0	(0)	1	(3.8)
Guardian's education (who completed the questionnaire)				
Did not complete high school	0	(0)	1	(3.8)
Completed high school	3	(18.8)	7	(26.9)
Some college or vocational training	3	(18.8)	2	(7.7)
Completed college or university	7	(43.8)	9	(34.6)
Completed graduate degree	3	(18.8)	1	(3.8)
Missing data	0	(0)	6	(23.1)
Annual household income (CAD)				
≥ $80,000	12	(75.0)	1	(3.8)
$40,000-$79,999	2	(12.6)	10	(38.5)
≤ $39,999	1	(6.3)	7	(26.9)
Missing data	1	(6.3)	8	(30.8)
Residency type				
Single family home	1	(6.3)	14	(53.8)
Other	15	(93.7)	11	(42.4)
Missing data	0	(0)	1	(3.8)

2.2. School catchment area profiles

To characterize the context for urban and suburban children, we obtained geographic information systems (GIS) files of school catchment boundaries for participating schools from the City of Vancouver (Open Data Vancouver, 2016) and the City of Surrey (Open Data Surrey, 2016) Open Data catalogues. For each school catchment, we obtained a Walk Score® (Redfin Real Estate, 2013) to represent neighbourhood walkability (scored between 0 'car-dependent' and 100 'walker's paradise'; calculated based on distance to nearby amenities, intersection density and block lengths). As a proxy for area-level socio-economic status, we obtained household income data from the 2011 National Household Survey (Statistics Canada, 2011); we calculated average annual income for each catchment area. We used Census data (Statistics Canada, 2011) to obtain population counts. Population density was calculated as [population within school catchment (count)/school catchment area (km^2)]. We obtained data on crime from municipalities' respective Open Data catalogues (Open Data Surrey, 2015; Open Data Vancouver, 2015); these data include incidents of break and enter of commercial and residential property, theft of and from cars, and mischief/shop lifting. Crime rate for each catchment area was calculated as incidents per 10,000 residents. School catchment area profiles are summarized in Table 2.

2.3. School travel

To characterize participants' main mode of travel to/from school we asked them to complete a self-administered questionnaire. We used geographic information systems software (GIS; ArcGIS v. 10.1; Esri Inc., CA) to geocode participants' home addresses and to calculate the shortest travel distance between home and school along the street network (Can Map Streetfiles 2011; DMTI Spatial).

Table 2
School catchment area profiles across a range of parameters: walkability (WalkScore®), socioeconomic status (mean annual income) population density and safety (crime rate), by urban and suburban neighbourhood type.

	Urban (n=1)	Suburban (n=2)	
School catchment area (km^2)	0.8	2.5	1.3
WalkScore® (/100)	98 "walker's paradise"	60 "somewhat walkable"	50 "somewhat walkable"
Average Annual Income (CAD)	51,751	26,603	26,499
Population density (residents/km^2)	20,060	3,567	3,643
Crime rate (incidents/10,000 residents)	526	1449	953

2.4. Focus groups

We conducted nine semi-structured focus groups in spring 2014 (Vancouver: 4 focus groups; n=16; mean age 10.3 years; range 9–11 years) and spring 2015 (Surrey: 5 focus groups; n=26; mean age 11.3 years; range 9–13 years). Focus groups were moderated by two researchers and were conducted in a quiet classroom (3–7 children per group) during students' regularly scheduled lunch hour. Focus groups were audio-recorded and ranged from 26 to 48 min in duration. Immediately after the completion of each focus group, the two researchers recorded their overall impression of participants' responses and level of comfort with the interview process. They also recorded emerging themes and initial insights.

2.5. Data analysis

Focus groups were transcribed verbatim using a professional transcription service (Online and Ontime, Vancouver, Canada); data were uploaded into the qualitative data management program NVivo 10.0 (QSR International, Melbourne, Australia) for analysis. Transcripts were analyzed independently by two members of the research team using a Framework analysis that includes four stages: 1. familiarization, 2. thematic identification, 3. charting and 4. interpretation (Pope et al., 2000; Rabiee, 2004). We identified two *a priori* themes ('Barriers' and 'Facilitators' to AST) that we applied to structure interpretation of data. 1. For data familiarization - we listened to recordings and thoroughly read and re-read transcripts and reflective journals. We made initial notes regarding key words, patterns and categories. 2. For thematic identification - once familiar with data, we individually highlighted segments of text and applied coding labels and recorded notes/memos using NVivo. Then, we met to compare, discuss, confirm and define codes and created a final coding framework. This final framework was reapplied to each transcript. We then met a second time to compare coding of all nine transcripts and to identify themes. We noted disagreements and discussed differences until we reached consensus. 3. For charting -data were extracted from transcripts and charted in a table using illustrative quotes from participants to best exemplify themes. We sought to identify major themes from the dataset by focusing on the research objective (to describe AST) within *a priori* themes (barriers and facilitators to AST). We also made connections between coded/charted data and reflective journals. 4. For interpretation – the entire research team met to discuss main themes and generate possible explanations. We used a number of strategies to reinforce the rigor of our study. These were: peer examination to develop themes (meeting with the research team and through smaller focused discussion groups), triangulating reflective journals and focus group transcripts to confirm findings, and by keeping a record of decisions made throughout data collection and analysis (Cutcliffe and McKenna, 2004; Koch, 2006).

3. Results

3.1. Descriptive information

Familial and neighbourhood descriptive information provided in Tables 1 and 2 highlight that the urban and suburban children in our study live in very different socioeconomic and cultural environments. Half of the urban children identified as Caucasian, whereas only 15.4% of suburban children identified as Caucasian. Seventy-five percent of urban children spoke English as their primary language at home, whereas only 26.9% of suburban children did. Suburban children's parents were less educated and produced a lower annual household income than urban children's parents.

The socioeconomic status, neighbourhood design and built environments where the children lived were also markedly different. The two suburban neighbourhoods had an average annual income roughly half that of the urban neighbourhood.

Table 3
Proportion of children choosing different travel modes across urban and suburban neighbourhood types and average walking distance between home and school.

	Urban (n=16)		Suburban (n=26)	
	% (n)	distance (km)	% (n)	distance (km)
Active School Travel	81% (13)	0.47	69% (17)	0.61
Car	19% (3)	1.73	27% (7)	0.78
Mixed (active, non active)	0% (0)	n/a	4% (2)	1.03
All	100% (16)	0.71	100% (26)	0.70

Population densities were five times sparser and school catchment areas were 1.5–3 times bigger in the two suburban neighbourhoods. Unsurprising for a dense downtown urban neighbourhood, only one urban child (6%) lived in a detached single family home, whereas more than half of suburban children did. The walkability of the urban neighbourhood was classified as a "walker's paradise", whereas both suburban neighbourhoods were considered "somewhat walkable".

We classified participants as using AST ($\geq$ 7 trips/week), car users ($\geq$ 7 trips/week) or mixed users (4–6 car and/or AST trips/week) based on mode of transport they used during their 10 trips to/from school per week (5 trips to school, 5 trips from school). Active travel was the predominant mode of school travel in both urban and suburban neighbourhoods (Table 3). Walking was the primary mode of transport to/from school and car use the secondary mode of travel across the two neighbourhoods we studied. One urban child rode a scooter and one suburban child used a mix of walking and skateboarding to/from school. Two suburban children used a mix of driving and walking/biking.

3.2. Major themes

Our semi-structured focus group guide was designed to engage children in discussion regarding modes of travel they used to/from school and to describe their experiences during the trip. We identified five major themes: proximity, neighbourhood safety, parental support, peer relationships and traffic safety (Table 4).

3.2.1. *"I think it's easier 'cause my building's very close" (Proximity)*

Proximity of children's homes to their schools arose as a topic of interest in all nine focus groups. Proximity was most often described as a facilitator of AST ("I live close", so I walk), but in some cases was also described as a barrier ("I live far away", so I drive). Proximity was overwhelmingly the most prevalent and influential factor when urban children were asked to describe their chosen school travel mode. During one focus group a couple children quickly stood up to point through the classroom window to where they lived.

"My house is right there." (urban 1, AST).

"Oh, that's really close." (moderator).

"Mine is right there." (urban 2, AST).

"Oh, you guys all live close." (moderator).

However, children who lived further away from school were more likely to be driven. One child explained that she was driven because she lives on the boundary of the school catchment: *"I don't actually live around here. I'm not that far away in the facility [catchment] but almost to the edge, basically." (urban, car user).*

Due to their close proximity to school four urban children described walking to school as a more "convenient" mode of transportation compared with biking or being driven. For apartment dwellers, for example, taking the elevator down to the car/bike and driving/riding back up was perceived to be "inconvenient" and/or a "hassle" when going such a short distance. Thus, they perceived that it took more time and preparation to travel by car/bike than simply walking out the front door. As one urban child explained, *"I think it would be much more of a hassle if we had to go down to the car, and like, drive, just across*

Table 4
The 5 major themes that emerged from focus groups (by neighbourhood) and the number of times these themes were highlighted as emergent in reflective journals.

Major Themes	Urban (n=4)	Suburban (n=5)
Proximity +/-	4	3
Neighbourhood safety -	1	4
Parental support +/-	2	3
Peer relationships +	2	2
Traffic safety -	2	2

+ indicates the theme as a facilitator; - indicates the theme as a barrier; +/- indicates the theme as both a barrier and facilitator.

the street." (urban, AST).

The theme of proximity emerged again when we used GISto map street networks and walking distance between children's homes and their schools. On average, children who lived closer to school, more often reported using AST compared to children who used mixed transportation or were driven most often. Additionally, children who lived closer to school reported using AST more often than children who lived further away (Table 2). Children who lived further from school reported higher use of mixed travel modes and car use.

3.2.2. "And then the stranger says, 'Come over here'" (neighbourhood safety)

Children who lived in both urban and suburban neighbourhoods described encounters with people that made them feel uncomfortable during active travel through their neighbourhoods and on their way to/from school. They used words such as "bad", "hobos", "creepy", "strangers" and "suspicious" to describe individuals who made them fearful.

Four urban children described "bad people" as a concern in their neighbourhood. They voiced fears that included assault, abduction, bike theft and general feelings of fear. Although these children were fearful, none stated that encounters with these people affected their decision to use AST. This sentiment was illustrated by one child in a discussion with the focus group moderator:

"When you're walking to school are you scared of other people or anything happening?" (moderator).

"No, sometimes there'll be suspicious people, but nothing will happen." (urban, AST).

In contrast, suburban children highlighted "bad people" as a major topic of discussion and a significant barrier to AST. Many neighbourhood safety issues arose during focus group discussions in the two suburban schools. Specifically, children expressed concerns that "bad people" they encountered on their trips to/from school or who lived in their neighbourhood made them feel afraid. Four children explicitly said they or their parents were afraid that as children they might be kidnapped. One child described their apprehensions, "*I don't really like strangers. Like, a lot of people in here, they look weird…I really hate it….I feel I'm going to get stolen." (suburban, AST)* Some children also recounted personal stories regarding home and car break-ins (n=3), police cars and ambulances in their neighbourhood (n=3), and neighbours who were suspected drug dealers (n=2). Children in one suburban focus group explained that people were no longer walking because they were concerned about two ex-convicts who moved into the neighbourhood. One child explained that because these people are in the area it affected the entire community's transportation choices:

> "They moved here, so everyone is just, like, really freaked out and afraid. No one is walking anymore the way they did before. They're walking on the main streets with other people or getting dropped off in a car." (suburban, AST).

Suburban children also identified specific areas of their neighbourhood where they were more likely to encounter "bad people". Four children felt unsafe around forests near their home/school where "bad people" were thought to either live or hangout and two children felt unsafe at public transit stops (i.e. bus stop, sky train station) due to the types of individuals that waited there.

3.2.3. "He tells me that it's better walking" (parental support)

Children who lived in urban and suburban neighbourhoods noted some parent factors that served both as facilitators and barriers of AST. Children described many instances where parents facilitated AST through encouragement, support and/or as role-models. For example, parents encouraged and supported AST when they encouraged their children to walk to school alone, with family and/or with friends. Parents were described as role-models of active transport behaviour when they chose active transport themselves and/or walked with their child to/from school. Themes of parental support and as role-models were exemplified by one suburban child's description of how his father walked with him part way to school: *"I walk with my dad 'cause my mom goes to work. And so when I walk with my dad, he usually drops me off halfway 'cause, like, I know the rest [of the way]. (suburban, AST).*

Although parents as support and role-models were highlighted most often as facilitators to AST, there were circumstances when they were also depicted as barriers. To illustrate, parents who drove their children to/from school supported and role-modeled inactive school travel behaviour. Three suburban children postulated that this was because their parents thought that it was safer to drive them to school: "*My parents usually drive me 'cause they don't think it's safe for me to walk to school.*" (*suburban, car user*). Parent work schedules were also highlighted as a barrier to AST. Four of nine children who reported being driven to/from school every day reported that their parents dropped them off on their way to work. Additionally, three AST children reported being dropped off at school occasionally on days when their parents were driving to work: *"My dad takes me to school in his car. And then he goes off to work." (suburban, car user)* Children also reported occasionally being driven to school if it was raining heavily (n=4) or if they were running late (n=3). One child described this scenario: "*But sometimes when we're late, [my friend's] father is driving us to school. Well, that's just sometimes…Well, when we're late or when it's raining." (suburban, AST)* A number of children highlighted that cycling to school was no longer an option for them as their bikes were either too small (n=1), required maintenance (n=4) or they didn't have one (n=2): "*I don't have a bike." (suburban, AST).*

3.2.4. "We're best friends" (peer relationships)

Many children that walked to school in urban and suburban neighbourhoods described positive encounters with friends

en route to school. Interestingly, suburban children highlighted purposefully stopping by a friend's home so that they could walk to school together, more often than did urban children. This sentiment was captured in one child's statement: *"I go to my friend's house to pick him up. Then we just walk to school." (suburban, mixed)* Urban children however, most often described meeting up with their friends en route to school (by chance) rather than purposefully meeting them. One urban child described meeting a friend on the way to school: "*I usually, like, find them on the way walking to school. So, sometimes I get to walk with them and, like, have a little chat." (urban, AST).*

Although urban children enjoyed seeing their friends en route to school, purposely meeting up with them was not highlighted as a facilitator to walking to school. On the flip side, one suburban child described how walking with friends motivated her to go to school: *"It's more fun. You get motivated to kind of go to school 'cause you're with friends…by yourself you're, like, 'I'm lonely and tired.'" (suburban, AST)* Two suburban children felt that walking with friends was "safer" than walking alone. However, they did not explain further as to whether or not they would still walk to school if they had to walk alone.

3.2.5. "It's kind of a dangerous road" (traffic safety)

Many children, primarily urban dwelling, expressed uneasiness about traffic safety, such as wide, busy intersections they had to cross, and bad drivers they had to be cautious of, when walking to school. A statement by one child from a suburban neighbourhood exemplifies this issue; "*Because when we cross the street, like, some cars, they just go randomly through and then when I'm with my sister we can't handle that because we're still kids." (suburban, AST)* Three children from urban neighbourhoods believed that the walk signal at the intersection of the major road near the school counted down too quickly, which caused them to feel rushed. One child explained, *"It's, like, hard to explain. You know, the hand goes– the numbers count down, it's like really fast…" (urban, AST).*

Although many children highlighted concerns about traffic, intersections and bad drivers, very few noted that their concerns were a barrier to AST. They were just issues they had to be aware of in order to travel safely to/from school. One child from an urban neighbourhood describes his actions when crossing the street, "*It's just that I have to be cautious and I have to look over here and then look over here, like, I just have to be very cautious when I'm walking." (urban, AST)* Thus, for many, traffic safety was a concern, but not an insurmountable barrier. However, one child highlighted that it was a barrier. He explained that because of his concerns he wasn't ready to walk to school by himself, even though his parents were supportive: "*My parents say I should do it, [but] I'm not ready 'cause it's such a big street." (urban, AST).*

3.3. Suggestions to overcome AST barriers

Throughout focus group discussions, children offered suggestions and strategies to overcome barriers to AST. To increase safety, many suburban children highlighted the importance of travelling with a friend or parent: *"If a stranger comes, and you're alone, like, we don't know what to do. If our parents are there, it's more safer. They could look after us." (suburban, car user)* Children from suburban neighbourhoods also discussed the importance of recognizing and avoiding bad people when traveling alone. One child described what she would do in that situation: *"I walk slower. I walk slower till, like, they [bad people] go, like, till I can't see them."(suburban, AST).*

When walking or cycling to school, children recognized dangerous streets they needed to cross and occasionally bad drivers to look out for. These children emphasized being cautious and aware of their surroundings to avoid accidents: *"I do know there are some drivers around my building, that do, like, cut through red lights and stuff. So I am a bit cautious of that." (urban, AST)* A few children avoided high traffic streets or areas they perceived as unsafe. Children selected alternate routes to school that they perceived as safer, such as walking through alleyways: "*Well, if we're just going straight to school, we go through these alleys. And there's not many cars there…because alleys have less cars, and it's– like, it's more safe." (suburban, AST).*

4. Discussion

We used qualitative methods to explore and describe the school travel experiences of children who lived in two very different environments: a suburban area, primarily comprised of detached single family homes, with a higher population of immigrant families with lower socioeconomic status; and Vancouver's dense urban core, whose residents primarily live in high-rise apartments and have higher socioeconomic standing. Our findings highlight social and environmental factors which influenced school travel behaviour and perceptions. Through thematic analysis we identified 5 main factors that influenced school travel mode choice – proximity, neighbourhood safety, parental support, peer relationships and traffic safety. Factors were unique to neighbourhood setting and the weight of their influence varied across individuals. Interestingly, children devised many personal strategies for overcoming barriers to AST. We extend the existing literature by generating first-hand accounts from the children themselves as to their perceptions, thoughts and feelings about what supported or inhibited their active travel to/from school in these very different neighbourhoods.

We described urban and suburban children as coming from contrasting cultural and socioeconomic families and neighbourhoods. It is pertinent to note, that factors such as culture/ethnicity (Stewart et al., 2012; McDonald, 2008a) and socioeconomic status (Mitra and Buliung, 2012; McDonald, 2008a) have been shown to influence AST behaviours. However, these factors did not emerge from thematic analysis as major barriers to and facilitators of AST. We do not conclude that

these factors had no influence on children's AST behaviours, just that they were not identified within the scope of our study. Additional studies exploring the influence of these factors on AST is warranted.

We and others (Faulkner et al., 2010; Martin et al., 2007; McDonald, 2007; Trapp et al., 2012) highlight an association between AST and the proximity of a child's home to their school. This dominant theme arose from children who directly stated that proximity to school was the foremost reason for walking to school. Of note, driving or biking to school was perceived as inconvenient when children lived close to school. On the flipside, if there is a long distance between home and school or if there are no safe pedestrian or bike pathways a parent may be more likely be to drive. This exemplifies the idea of choosing the transportation mode that is perceived to present the fewest barriers and/or be the most convenient (Faulkner et al., 2010). We also note, although proximity to school emerged as a major theme in both urban and suburban neighbourhoods, it was emphasized more often as a facilitator by urban children likely due to shorter distances these children travelled to school, on average.

Neighbourhood safety emerged as a major concern for children in our study. They expressed fear of bike theft, vandalism, and for their personal safety, including assault or abduction at the hands of “bad people”. ‘Stranger danger’ is well documented in the active travel literature as a barrier to AST (Ahlport et al., 2008; Morris et al., 2001; Timperio et al., 2004). Despite markedly different crime statistics (Table 2), neighbourhood safety was highlighted as a barrier to AST by children who lived both in an urban center and the suburbs. Children from urban areas (where crime rate was lower) voiced mild concern over bike thefts and “suspicious” looking people, whereas children who lived in suburban neighbourhoods (where crime rate was higher) provided anecdotal evidence regarding fear of assault or abduction, especially when travelling alone. The role of mass media covering crime and drug related gang violence in this particular suburban area is also likely to have an influence on parents’ and children's perceptions of neighbourhood safety, as local television crime coverage has been shown to significantly elevate community perceptions of risk and fear of crime (Callanan, 2012). As described in one focus group, recent media attention was given to the relocation of two ex-convicts to the area, one of which was a high-risk sex offender. As a result, the children described anxiety within the community towards walking alone.

McMillan (2007) examined the relation between urban form and AST; she found that the number of windows facing the street and mixed land use were positively associated with AST behaviour. Children from urban areas may feel safer as a result of living in higher density, mixed land use neighbourhoods that provide more ‘eyes on the street’ (Kerr et al., 2006). Downtown Vancouver exemplifies this as its urban form is comprised of many high-rise apartments, often with commercial space at street level. This may provide urban-dwelling children and their parents an increased sense of security (Loukaitou-Sideris, 2006). A number of effective strategies to alleviate personal safety fears include the walking school bus (Kingham and Ussher, 2007), walking with friends (Ahlport et al., 2008; Faulkner et al., 2010) and encouraging parents to accompany their children during the walk to/from school when possible (Ahlport et al., 2008; Romero, 2010). In addition, children should be provided a safe place to store their bikes during school hours, this may support increased cycling rates (Mammen et al., 2014).

Children from urban and suburban neighbourhoods were concerned about traffic safety (e.g. large intersections, short walk signals, bad drivers). However, these concerns did not prevent most children from using AST. Perceived lack of traffic safety measures, particularly in high-traffic areas was previously noted as a major deterrent to AST (Fusco et al., 2012; Martin et al., 2007; Panter et al., 2010; Rothman et al., 2015; Trapp et al., 2012). Children who lived in the Vancouver's urban core engaged in rich discussions about traffic safety. This makes conceptual sense given high traffic volumes in dense urban areas. A number of urban-dwelling children identified features of the built environment that made them feel unsafe, particularly walk signals that counted down too quickly and did not give them sufficient time to cross the street. In both neighbourhood types, traffic calming measures and safety elements such as marked crosswalks or crossing lights around schools may reduce vehicle traffic and improve children's perception of safety.

Some children in our study described parental support facilitators to AST such as walking to/from school with a parent and/or being encouraged to walk to/from school by parents who actively travel. Carlson et al. (2014) found that parents who regularly engage in active travel tend to have children who are more likely to use AST. This suggests that interventions targeting parents active travel behaviours as well as children's may be more effective. On the flip side, children also identified parental support barriers to AST. Negative parental perceptions of neighbourhood safety is well-documented as a barrier to AST (Ahlport et al., 2008; Carver et al., 2010; Chillón et al., 2014; Faulkner et al., 2010; Loptson et al., 2012). Children who lived in suburban areas, reported high parental concern for neighbourhood safety. Suburban children who were driven to/from school believed that they were driven because their parent(s) perceived the neighbourhood to be unsafe. This finding is in agreement suburban parents’ survey data, which revealed that perceived neighbourhood safety (traffic and crime) was significantly associated with the children's daily AST (children who reported ≥ 9 active trips/week) (Mah et al., in press). Children in our study also described being driven to school as part of their parents’ commute to work. Qualitative findings have identified inflexible work schedules and convenience of dropping children off on the way to work as barriers to AST (Ahlport et al., 2008; Faulkner et al., 2010). Results from quantitative studies have also found a negative relationship between inflexible parental work schedules and convenience and AST (McDonald, 2008b; McDonald and Aalborg, 2009; Wen et al., 2008). The relationships found in this study between parental support or lack thereof and AST highlight the need for future interventions to focus on engaging parents in AST by alleviating parental neighbourhood safety concerns and promoting parental active travel (to/from work and school).

We add to the body of literature that identified peer relationships as a key facilitator of AST (Kirby and Inchley, 2009; Romero, 2015). Children living in suburban areas described intentionally meeting friends to walk to school, while children

from urban areas described coincidentally meeting up with friends en route to school. Personal safety concerns may impel some suburban children to seek out opportunities to walk with friends to/from school, as personal and parental safety concerns may be allayed when walking in pairs or groups of friends (Ahlport et al., 2008; Faulkner et al., 2010). The tremendous differences in urban form might also play a part. It is possible that within dense urban neighbourhoods, it may not be perceived as safe or convenient to wait for or call upon a schoolmate who lives in a high-rise apartment complex. Children spoke of these buildings as less convenient for car travel (waiting for an elevator, walking to the parking garage) than simply walking to school – the same considerations may come into play when deciding to meet up with a peer within these buildings. Waiting outside a building in an urban core would also expose children to passersby – feeding the concern that children expressed about 'strangers'. The converse of this in suburban areas is children waiting for peers either outside or inside predominantly single-family detached homes; the child would likely know the family of their friend who resides there and as such would feel safer. Peer-to-peer support for AST may be one effective means to alleviate safety concerns of parents and children. It therefore seems important to better understand the role of the built environment (especially types of dwellings – high rise apartment vs detached single family home) on AST.

Children may well be the keepers of solutions to effectively implement AST plans and programs within schools. We note that they are eager to share their experiences and offer solutions to AST-related issues that affect them (Sims-Gould et al., 2014). Many children in our study developed personal strategies to overcome barriers. For example, to alleviate concerns about personal safety children would walk to/from school with a friend, relative or parent. When walking alone in neighbourhoods they perceived as unsafe, they were more alert and cautious or avoided those areas altogether. In high traffic areas, children emphasized being cognizant of bad drivers when crossing major intersections. Therefore – we suggest students be consulted as part of developing much needed Active and Safe Routes to School programs within schools.

Issues of proximity or lack of parental support for active modes of travel may be more challenging to overcome. If a parent feels the distance to school is too far to walk or possibly unsafe, they will not permit their child to actively commute to school. Children who offered strategies related to personal safety during the active commute to/from school had the full support of parents. This speaks to the need to bring schools, parents and children together to share concerns and offer strategies that could be implemented within effective Active and Safe Routes to School models (Macridis and García Bengoechea, 2015).

4.1. Limitations and strengths

We recognize limitations of our study that need to be considered when interpreting our findings. First, we did not interview parents to obtain parental perspectives and opinions regarding AST. However, we did obtain parental perspectives via survey, which are the focus of a manuscript that examines the association between parental support and children's AST (Mah et al., in press). Conducting interviews with parents would have allowed us to probe and elucidate their feelings and perceptions towards AST, thereby increasing the overall depth and richness of our data (Merriam, 2009). Although children often have a personal preference for school travel mode, the final decision often falls on the parents (Faulkner et al., 2010). Therefore, parental perceptions seem an essential component to guide effective behaviour or school policy changes. Future studies might include perceptions of both parents and children to obtain a more complete picture of similarities and differences in barriers and facilitators of AST. Subsequent studies, might also address more effective approaches to; 1. alter parental perspectives regarding perceived dangers of AST, and 2. inform policy and practice.

Second, our findings are specific to children who lived in two diverse regions of Metro Vancouver and cannot be generalized to children from suburban and urban communities elsewhere. The majority of children who volunteered for our study used active transport to travel to and from school (71%). Therefore, they over represent the estimated 25–35% of children that regularly engage in AST (Gray et al., 2014). It could be that car users were reluctant to participate in a study exploring school travel behaviours, especially since the larger *ASAP Jr.* study focused heavily on physical activity. The participation of more car users may have provided greater insight into the barriers of AST. However, our study is among the first to use qualitative methods to explore urban and suburban children's first-hand experiences and perceptions of AST. This speaks to the need for other studies that use qualitative methods to gain a deeper understanding of barriers and facilitators to AST in other urban, suburban and rural communities locally, nationally and internationally.

5. Conclusion

Children's experiences are often absent in school travel studies. However, we showed that children were able to provide valuable insight into their school travel experiences. Our findings expand on the results of others by describing both urban and suburban children's school travel experiences and by discussing the influence of neighbourhood type on AST behaviour and perceptions. Urban and suburban children were shown to experience similar barriers and facilitators to AST. However, the extent to which these factors influenced AST, unsurprisingly, varied between neighbourhood types and between individuals. Although many children overcame barriers such as personal safety to commute to/from school each day, we recommend that schools engage children in the design of AST programs. We also recommend that future school travel studies, include focus groups with parents.