



School active transportation planning and implementation: Exploring the perspectives of champions across Alberta, Canada

Soultana Macridis^{a,b,*}, Kimberley McFadden^b, Nora Johnston^{a,b}, Brian Torrance^c,
Lesley McEwan^d

^a Alberta Centre for Active Living, Faculty of Kinesiology, Sport, and Recreation, University of Alberta, Alberta, Canada

^b Faculty of Kinesiology, Sport, and Recreation, University of Alberta, Alberta, Canada

^c Ever Active Schools, Alberta, Canada

^d Safe Healthy Active People Everywhere (SHAPE) Alberta, Alberta, Canada

ABSTRACT

Objective: The objective of this study was to understand school active transportation (AT) programming and implementation in diverse communities across the province of Alberta from the perspective of school AT champions who lead and facilitate the process.

Methods: An online survey was administered through partner networks reaching province-wide between April 17 and May 17, 2017 with questions about: school demographics, years of active school AT programming, types of AT initiatives, and barriers and facilitators of AT planning and implementation. Key-informant interviews followed to elicit greater meaning to findings.

Results: Twenty-one school AT champions completed the survey, of which 50% were teachers located in urban centres (51%) serving grades K-12 students. One-third of respondents were champions for ≥ 5 years. Champions formalized stakeholder committees comprised of: school staff, parents, students, and community traffic safety committees. Most undertook school AT planning activities, however only 23.8% reached implementation. Common barriers of planning and implementation included: insufficient support, distance, time, environment (e.g. weather), teacher turn-over, cost, perceived safety, and legal implications. Champions suggested areas for improvements including: municipal/provincial policy, promotional/educational materials, and volunteer recruitment.

Conclusions: Findings demonstrate significant interest exists in school AT across Alberta. Champions are actively pursuing AT planning, but are experiencing a number of barriers in achieving successful implementation. Future directions include lobbying for greater financial support, educating champions and stakeholders on how to implement AT in their unique school setting, and finding ways to generate interest and enthusiasm for AT within school communities. The unique challenges of AT implementation in rural schools also need to be addressed.

1. Background

Sedentary lifestyle behaviours combined with increased caloric intake have contributed to the growing concerns around childhood overweight and obesity, which are risk factors for chronic diseases (Carson et al., 2016; Tremblay and Willms, 2000). The 2009–11 Canadian Health Measures Survey, using World Health Organization cut-off points for overweight and obesity, found that 32% of 5- to 17-year olds in Canada are overweight (20%) or obese (12%); an estimated 1.6 million children and youth (Roberts et al., 2012). In Alberta, 27.7% of children aged 12 to 17 were overweight or obese in 2014 (Statistics Canada, 2016). School physical activity (PA) interventions, such as active transportation (AT; walk, cycle, etc.) to and from school, provide children the opportunity to contribute to their daily PA levels, improve fitness, and reduce risk of diseases (Heath et al., 2012). Research has found that children who use school AT have higher PA levels, are more likely to meet PA guidelines, have increased self-confidence and

* Corresponding author: Alberta Centre for Active Living, Faculty of Kinesiology, Sport, and Recreation, University of Alberta, 2-131 University Hall, 8840-114st NW, Edmonton, Alberta, Canada, T6G 2H9.

E-mail address: soultana@ualberta.ca (S. Macridis).

<https://doi.org/10.1016/j.jth.2018.09.010>

Received 6 March 2018; Received in revised form 29 August 2018; Accepted 26 September 2018

Available online 18 November 2018

2214-1405/ © 2018 Elsevier Ltd. All rights reserved.

independence, and are less likely to be overweight compared to those children who travel by vehicle (Alexander et al., 2005; Cooper et al., 2005, 2003; Heelan et al., 2012, 2005; Rosenberg et al., 2006; Salmon et al., 2005; Southward et al., 2012; Tudor-Locke et al., 2001; Tudor-Locke et al., 2002; van Sluijs et al., 2009).

Beginning in 2001, SHAPE (Safe Healthy Active People Everywhere) started working directly with school councils and administration to undertake the School Travel Planning Process (STP) to develop school travel plans. SHAPE promotes the use of Canada's Active & Safe Routes to School's STP to identify barriers and facilitators of AT, to translate findings into action plans for implementation, and to undertake follow-up evaluation for maintenance and sustainability (SHAPE Alberta, 2001). The STP process is a comprehensive and collaborative approach that has been adopted by schools to develop interventions to tackle multi-level barriers for school AT (Green Communities Canada, 2016a). STP involves 5 stages: (1) Program Setup; (2) Data Collection and Problem Identification; (3) Action Planning; (4) Implementation; and (5) Ongoing Monitoring (Buliung et al., 2011; Green Communities Canada, 2016a).

It is widely recognized that undertaking the STP process increases the number of students using AT to/from school and has helped to make the journey safer in Canada, the United States, and internationally (Buliung et al., 2011; Green Communities Canada, 2004; Macridis and Garcia Bengoechea, 2015; Mendoza et al., 2009; Sirard et al., 2008). However, there is limited understanding about what makes a successful and sustainable school AT program in diverse school communities across Alberta, Canada or how champions work to achieve their school AT goals. Therefore, the aim of this study was to understand school AT programming and implementation in diverse communities across the province from the perspective of school AT champions who lead and facilitate the process. More specifically, this study focused on: i) identifying key STP processes undertaken by champions; ii) determining champions' knowledge and support for school AT; iii) identifying and understanding unique facilitators and barriers of school AT and how each were leveraged or overcome, respectively; and iv) generating strategies that could support school AT across the province.

2. Methods

2.1. Participants

Participants included school AT champions who have undertaken or are currently undertaking STP initiatives in their school or region. An AT champion could include, but is not limited to, a facilitator, advocate, teacher involved in AT planning and implementation in their school or broader school community.

2.2. Instruments

A survey was co-developed with input from our advisory group, which consisted of leads from active living organization partners in Alberta, and formatted for online access through Survey Monkey. Questions were developed to provide a mixture of quantitative and qualitative data and included topics on: demographics (e.g. location/region, STP role, number of years as a facilitator, number of schools/regions served), the overall STP process (e.g. key steps and activities undertaken), and personal perspectives on i) their knowledge of school AT and STP, ii) if they feel adequately equipped to undertake STP, and iii) their level of success of implementation. Each quantitative question was rated on a 5-point scale from strongly disagree (1) to strongly agree (5). Participants were also provided with space to describe barriers and facilitators of AT and STP, as well as strategies to overcome or utilize each to support their STP.

At the end of the survey, participants were offered the opportunity to further contribute information regarding their experiences as an AT champion by participating in key-informant interviews. The interview script was developed using main findings from the survey, which were used to elicit greater meaning and understanding of how school AT is developed in different regions of Alberta.

2.3. Procedure

The online survey took place between April 17 and May 17, 2017. Potential participants were recruited through the core partnership organizations email listservs and social media, including the Alberta Centre for Active Living (<https://centre4activeliving.ca>), SHAPE Alberta (<https://shapeab.com>), and Ever Active Schools (<https://everactive.org>), which at the time consisted of 2000, 800, and 1900 subscribers, respectively. Potential participants were informed that by accessing and completing the survey, they were providing free and informed consent. For eligibility purposes, participants were asked if they had acted as or are currently a school AT champion. If the participant selected "yes", they proceeded with the rest of the survey. Participants had an opportunity to agree to be contacted for a follow-up interview. Telephone interviews were conducted between June 12 and July 31, 2017.

2.4. Data analysis

Data were assessed for survey completeness or unusual responses prior to analyses. Summary statistics including frequencies of demographics and overall STP processes were conducted. Average scores for scale items were conducted, with higher scores indicating a strong level of agreement. Qualitative data from the survey and from key-informant interviews were reviewed by authors SM and KM, transcribed verbatim, and analyzed using content analysis consistent with the methodological approach of qualitative description (Sandelowski, 2000). Content analysis involved reviewing data to identify, code, categorize, classify, and label main patterns in the data (Patton, 2002). To achieve this, SM and KM independently read the transcripts as a whole to become familiar

Table 1
Demographic characteristics of AT champions (n = 21).

Characteristic	n = 21 (%n))	
Primary role		
Principal	9.5 (2)	
Vice-principal	4.8 (1)	
Teacher	47.6 (10)	
Administration	–	
Parent	14.3 (3)	
Health promotion facilitator	9.5 (2)	
Educational assistant	9.5 (2)	
School facilitator	4.8 (1)	
Years as an AT champion		
< 1 year	38.1 (8)	
1–2 years	14.3 (3)	
3–5 years	14.3 (3)	
> 5 years	33.3 (7)	
School location setting (n = 40 schools)		
Urban	30.0 (12)	
Sub-urban	15.0 (6)	
Rural	55.0 (22)	
School type		
Public	70.0 (28)	
Private	5.0 (2)	
Religiously affiliated	25.0 (10)	
School Travel Planning		
STP-Process		
Program setup (stakeholder committee formation)	23.8 (5)	
Data collection and problem identification	81.0 (17)	
Action planning	23.8 (5)	
Implementation	23.8 (5)	
Ongoing monitoring	9.5 (2)	
Data Collection Activities	Baseline	Follow-up
Parent survey	19.0 (4)	9.5 (2)
Student hands-up survey	23.8 (5)	4.8 (1)
Walkabout	23.8 (5) 14.3 (3)	4.8 (1)
Traffic observation counts	28.6 (6)	–
Mapping strategies	4.8 (1)	4.8 (1)
Cost benefit analysis		–
Perceived Achievement of Success		
Yes	52.4 (11)	
No	47.6 (10)	

with the content. Subsequent readings involved taking notes and identifying key phrases, words, ideas, and patterns, which were further pared down into main themes. At this point, both researchers discussed their findings and reached consensus regarding content and labels of themes and sub-themes. Further reading of transcripts, themes, and sub-themes was conducted to ensure fair representation of findings and trustworthiness. Throughout data analysis and manuscript writing, peer debriefing was used to facilitate ongoing discussion and questioning of the ideas, interpretations, and presentation of results. Participants' responses were carefully selected to further illustrate meaning.

3. Results

A total of 172 individuals accessed the survey. After review of AT champion confirmation and survey completeness, a final sample of 21 was achieved. Table 1 provides sample characteristics. The majority of AT champions were teachers (47.6%) who were champions for less than 1 year (38.1%), working across 40 schools, with the majority of schools located in rural settings (55.0%).

Only 23.8% of champions formed a stakeholder committee, comprising of teachers, principal and/or vice-principal, and parents or parent council, school administration, community traffic safety, and students. The majority of champions had conducted formative assessments through baseline data collection leading to planning and implementation of AT-related activities, with few conducting ongoing monitoring for maintenance of action plans (Table 1). Champions were also found to be highly knowledgeable about factors that can influence school AT, indicating moderate to high responses on all items (Table 2). The highest scores were for knowledge about the built environment (i.e. urban design, distance), policy (i.e. school siting, closures, transportation), and organizational (i.e. school structure, culture/characteristics) factors. At the same time, champions indicated having limited funding ($M = 2.33$, $SD = 1.11$) and moderate human (e.g. parents, teachers; $M = 3.10$, $SD = 1.18$) and physical (e.g. materials, space; $M = 3.24$; $SD = 1.09$) resources to support school AT programming.

Table 2

Level of agreement to being equipped with resources and to knowledge of factors that influence school AT.

Factor	M(SD)
<i>Level of agreement that the champion is knowledgeable of _____ factors that can influence school AT</i>	
Individual (age, gender, disability)	3.90 (0.99)
Psychological (attitudes, norms, beliefs)	3.86 (0.96)
Interpersonal (parent perceptions, habits, values, family characteristics)	3.76 (1.04)
Organizational (school structure and characteristics)	3.95 (1.20)
Built Environment (distance, urban design)	4.10 (0.99)
Policy (school site planning/closures, transportation)	4.05 (0.92)
<i>Level of agreement that the AT champion is well equipped with _____ resources when undertaking school AT programming in schools.</i>	
Human (parent, teachers, local authorities)	3.10 (1.80)
Physical (materials, space)	3.24 (1.09)
Funding	2.33 (1.11)

3.1. What we learned about school AT from champions

Champions expressed perspectives of STP through the survey and through key-informant interviews. Seven of the 21 champions agreed to be contacted for an interview, of which three consented to participate. The following section is organized by the five prominent themes that emerged.

3.1.1. Defining and achieving success and sustainability

When defining success, three main sub-themes emerged and included: student behaviour, increased support, and changes in community environment. Student behaviour referred to increased student participation in events, having healthy and active students, and having high adherence and maintenance of activity. As described, “*Having kids change their habits and understanding the benefits they could gain personally and how it can affect the rest of the world. Having kids adhere to the project and have them take part in building the project.*” Increased support was viewed as school community enthusiasm for programs and parental buy-in. As described by one champion, it is important to have, “*amazing people and volunteers who find time even when no time or priorities are given to these initiatives,*” and “*if you could get busy parents on board or open to hearing the benefits, then you are off and running. Sadly they are caught up in a fast paced lifestyle where time and convenience trump health and safety.*” Finally, changes in community environment were viewed as reduced vehicle traffic at/around schools, safe roadways, and more walking/cycling around schools.

Champions were divided on achieving their own vision of success as it can be, *very frustrating when no one wants to help. They all agree it's a great idea, but expect others to make it happen for their kids. Also sad when they "don't want my child walking that far."* Yet, another champion believed that:

I promote the special SHAPE events to the best of my ability and time and if I get just one student that usually drives to school and they walk on Walk to School Day or Wheel to School Day then that is a success.

To achieve success and sustainability, several recommendations were made. First, finding a passionate leader to help implement and generate buy-in from the most influential school individuals, most notably a principal. As experienced by one champion, “*I did learn that if your principal is not on your side, then you're not going to succeed. So the most important person in my opinion is the principal. And that makes or breaks your program.*” Second, taking time to build community engagement can help move initiatives forward. Specifically, recruiting individuals who are passionate about AT and working together as a group. Third, successes should be rewarded through incentives for stakeholders and students. Fourth, patience was recommended throughout programming, as it can be difficult to find people to commit long-term.

Education for students, staff, and parents was also recommended. Most notably, champions sought a foundation of knowledge to successfully initiate, educate, market, and implement school AT plans. As an example, “*...having someone who actually could come out, like whether it's on the Ever Active team or SHAPE team, or whomever, an actual body of knowledge who can come and assess where the group is at and help them.*” Champions also recommended being flexible and willing to adapt processes and plans based on available time and resources. As experienced, “*...so I guess not being married to it with 1) it being implemented; and 2) what it's going to look like. It may morph into something that you didn't expect and that's okay.*”

3.1.2. Comprehensiveness of school AT

Champions revealed a broad definition and interpretation of AT, reflecting location of schools and available resources, and the need to accommodate children living at a distance from schools, especially in a rural context because, “*it's easy in the town proper itself, but the AT bit gets challenging as it moves out of towns.*” At the same time, a culture of automobile-dependency was also expressed for both urban and rural settings.

AT in town is fairly easy to promote because the size of the town is so small and often you can get around fast on bicycle and foot. But you know we're very auto-dependent. At the same time, because there's a lot of people living in the rural areas and outside of the municipal districts and you're needing to get onto highways to get into town. [...] Then a lot of the work that I do on reserve and in rural or remote areas, it's actually fairly auto-dependent as well. The reserves I work in are fairly spread out. You know gravel roads, dust, seasonal,

everything. All those factors and stuff so it's pretty tricky.

To further highlight the difference in rural and remote areas,

[...] if they're old enough and their family has one, they do pull up to school in an off-highway vehicle and, whether they can legally or not, they do and no one is going to do anything about it. The fact that they're at school and have gone to school is actually the most important thing.

Aside from built infrastructure and road safety, other environment-related factors hindering use of AT included weather and potential interactions with wildlife.

In terms of implementation, champions identified three main types of activities including: special events or one-off activity days (e.g. Winter Walk Day, Bike Day); initiatives to increase regular/daily activity during school hours (e.g. weekly walking, walking classrooms.); and educational programs (e.g. pedestrian and cycling skills training, and student neighbourhood walkabouts). Rural/remote champions often increased activity during school hours through initiatives (e.g. "Don't Walk in the Hallways" program), and special event days as opposed to initiatives focused on AT to/from school, which are extremely difficult to achieve in rural areas. By embedding AT initiatives into the daily school culture and curriculum, teachers' burden was minimal.

So again, what I did was pick initiatives that staff wanted to do. I didn't force them to do anything because that would be an add-on. [...] So if there were initiatives that fit into curriculum, and so that would be very...that would be supported more than ones that didn't fit into curriculum. [...] So there's lots of great stuff happening in schools and I think if you build on whatever is happening in culture that already exists, [...] that's an easier approach. Because you already got buy-in to the initial thing.

Finally, a need to incorporate school AT into a larger school health and wellness agenda emerged with the perception that AT would be more easily received.

3.1.3. Seeking multi-level support

Generating and recruiting support from stakeholders within and outside the school community, as well as recognizing stakeholders' strengths and needs, was viewed as a key first step for successful AT.

So really I think that's what it comes down to, is building connections, which takes years, and then leveraging them when you need. But, also being aware of what your partners have. Being aware of what your partners' and stakeholders' need, and trying to move their stuff forward as well.

Champions viewed provincial-level partners and government, including proximal school board and municipalities and distal provincial and federal government bodies, as those who hold power to promote and provide financial support for school AT. One champion expressed that school AT has increased as, "different partners on a provincial level have helped to bring the issues forward and educate the public. Also, municipal governments supporting health of their community. A new provincial government, NDP (Alberta New Democratic Party), who has an ideology of prevention and supporting prevention." Yet, challenges existed in various contexts as:

You have to meet with council and they'll look at what you can do as a community to improve the built environment to increase AT and you know they're always working on sidewalks and trails, and overall [community] is pretty good especially compared to most of the other communities I work in. It just gets trickier and trickier as you get into the rural, and the rural and remote areas where off-highway vehicles are more common and honestly more practical as far as a means of transportation. Where there's no asphalt and no pavement and greater distances.

School policy misalignment and liability concerns were also identified to hinder AT efforts.

Silly policy at school like, 'Oh well the crosswalk that your walking school bus uses is not on school property, so we don't care about that. That's not our problem.' That's a big one. Just like, bureaucracy. I mean we've spent almost a year trying to get our crosswalk safer for kids.

Simultaneously, "the barrier is financial and you know when something does come in, do we have budgets? Can we scrape and find it? Do we have to reach out to our parent council again to fundraise money for it?" With limited funds, comes the need to adapt and be flexible, such that, "...having different suggestions or different budget amounts. So what we could do with \$0, what we could do with \$100, what we could do with \$1000." Limited funding also comes with limited support to evaluate progress and needs. Each champion indicated that no formal evaluation had taken place, but that a need existed for accountability and sustainability.

...you can have policy but, if there's no accountability and the school level or district level, the policy isn't going to get you much other than I guess bringing attention to the issue. But to actually have the actions, there has to be accountability to the districts and schools. And I guess with accountability comes measurement. You need the measurement of what's actually happening in schools and are they progressing. The data, we need the data.

Lastly, policy change at the municipal and provincial levels emerged as an important factor. Along with funding, champions identified a need for change in road/sidewalk/pathway regulations and maintenance, especially for rural contexts. Other suggestions included having, "provincial leadership and changes to bussing restrictions," having "municipal governments, health, and education working together to support an initiative province-wide," and having "policy implementation at district level and monitoring of the policy on an annual basis."

3.1.4. Shifting the culture

Champions faced challenges with social norms, particularly with parents' perception of safety and habit of transporting their children as part of their routine to ensure safe arrival.

So culture was one where kids got dropped off even though they lived two to three blocks away. So that was the biggest barrier to begin with was just well, what's the point? So I guess that is education to the community for one. Preconceived notions, so I did do a preliminary study of just why people were driving their kids to school and it was based on fear of strangers, fear of traffic, so we know fear of traffic is one, but fear of strangers isn't as it's unlikely to happen to your kid. That and the other one was convenience, it was the normal culture, and the majority of culture believes that it's okay right now.

Social stigma also surrounded AT, as it was associated with individuals in a low income bracket, who do not own a car, and have to use AT. As a result:

...there's a lot of people that drive a block at a time in [community] and it's because they have a vehicle. They have lots of vehicles and lots of cash...Majority of walkers in [community] are definitely [in a] lower income bracket [...] when kids see people that are walking, then they know they are lower income and they know they're not walking and they don't see people like me and my co-workers walking enough."

Resistance towards AT exists, leaving champions needing more support and training on different strategies to re-shape a culture conducive to AT, were also identified. One champion indicated that it *"would have been a huge help for me to have almost like a one-on-one hour session with someone who has experience in initiating and culture change and just some strategies on what to do."* Yet, education is just one angle, and as experienced by one champion, role-modelling was key for cultural shifts as it helped to *"elevate the profile. Just kids seeing other kids walk to school and ride their bikes. And eventually over 3 years it changed the culture of getting dropped off. It actually became less cool to do that."* Role-modelling extended to school staff, but it was also acknowledged that staff cannot be forced to implement initiatives in which they do not believe or are not comfortable. That said, some staff may feel they are better suited than others to model healthy behaviours for children at the school, and *"the school culture has to be there to accept it and want it in the first place."* Notably, *"ensuring it wasn't an add-on to staff's time."* As described by one champion whose school was, *"extending it [AT] now into a wellness branch in our division for our staff, as well to understand that staff wellness is paramount to student success and for us to be role models in that wellness focus."*

3.1.5. Student leadership

Champions indicated that adult-led initiatives often lost traction over time. Meanwhile, student-led initiatives were the most successful and sustainable, as students took ownership and demonstrated enthusiasm. When planning student-led initiatives, one champion indicated that they share the ideas during staff meetings to determine feasibility. In doing so, they are *"letting them [teachers] know their role in the initiative, be it as an observation or be it reminding and supporting the initiative. The, 'Hey don't forget, we're doing this today on the way.'"* Similarly, and linked to role-modelling, AT initiatives could provide a way to teach older students how to mentor and model behaviour for the younger students, *"no matter if it's grade threes teaching kindergarten or grade eights teaching grade fours or fives, or grade twelves doing the whole spectrum."*

4. Discussion

To the authors' knowledge, this was the first study to use a mixed-methods approach to understand school AT champions' perspectives of STP in Alberta, Canada. The first objective was to understand STP processes undertaken by champions across the province, as well as their perceived knowledge and support for AT initiatives. In this study, the majority of champions had undertaken the first four STP processes including program setup, data collection and problem identification, action planning, and implementation. Yet, few conducted on-going monitoring for review and maintenance of STP action plans. Regarding the first STP process, in this study stakeholder diversity emerged among committees. Mobilization and collaboration among community stakeholders and intended beneficiaries is a prerequisite for ensuring a lasting interface for health promotion initiatives (Green and Kreuter, 2005; Leviton et al., 2000). Recent studies in the Canadian context found that engaging diverse stakeholders, such as those from education, health, transportation, community organizations, businesses, and safety, provide a pillar for successful planning and implementation (Loitz and Spencer-Cavaliere, 2013; Macridis et al., 2016; Mammen et al., 2015). In fact, mobilizing and engaging stakeholders early on can lead to a lasting participatory interface, that can go beyond the initial project period and goals, and evolve in terms of stakeholder champions and ownership (Macridis, 2015; Macridis et al., 2016; Salsberg et al., 2017a, 2017b). Most notable of stakeholders to engage was a supportive principal – often a gatekeeper to culture and success (Loitz and Spencer-Cavaliere, 2013; Mammen et al., 2015). When school culture is aligned to support school AT, school staff become more energetic, enthusiastic, and motivated to see initiatives through (Crawford and Garrard, 2013).

This study found that champions were moderately to highly knowledgeable of factors that can support school AT, which in turn can influence use of school AT (Davison et al., 2008; Pont et al., 2009). Yet champions wanted more resources and educational support opportunities from SHAPE Alberta and Alberta Transportation, to be better equipped to plan and implement AT initiatives. At the same time, and a common barrier to school AT (Loitz and Spencer-Cavaliere, 2013; Macridis and Garcia Bengoechea, 2015; Mammen et al., 2015), champions reported having limited funding, as well as human and physical resources. This was unsurprising as SHAPE Alberta, the provincial AT lead, receives limited funds to support schools across the province. After over 10 years of Green Communities Canada's ASRTS, the Ontario Ministry of Education has invested \$3.5 million over 3 years for a project to increase school AT across the province. This project will: centralize support for local AT programming, including resources, training,

mentoring, peer-networking, research and more; and provide an application-based funding program in communities with demonstrated commitment and established partnerships, as well as matching funds from local partners (Green Communities Canada, 2017). In Canada and the United States, AT planning has been successful from both a top-down and bottom-up approach with varying degrees of funding support (Macridis and Garcia Bengoechea, 2015), however it is often the invested time and available resources to support such initiatives that can limit success, such as lack of attendance at meetings (Heinrich et al., 2011), staff/volunteers (Deehr and Shumann, 2009; TenBrink et al., 2009), time for outreach (TenBrink et al., 2009; Yee et al., 2007), and the experience of volunteers (Staunton et al., 2003).

The definition of success from the perspective of champions was explored in this study. Just over half of champions perceived that they had achieved success, however definitions of success varied. Changes in student behaviour, increased support, and changes in community environment were all seen to be important to achievements. As found in Mammen et al. (2015), the definition of success may vary due to the broad, yet comprehensive nature of STP, and as such, there is need to explore success through evaluation of various aspects, such as change in use of AT, the number of stakeholders involved, and even impact of changes to the built environment. Although STP provides a sufficient framework for planning and implementation, resulting action plans and implementation will meet the needs and supports available at each school (Green Communities Canada, 2016b). As such, the framework provides flexibility, and thus an opportunity for innovation to support school AT needs.

Champions identified barriers and facilitators of school AT that fell across the spectrum of the socio-ecological model – a model that has evolved to provide a general framework allowing for understanding of multiple levels of influence, which can assist in developing comprehensive multi-level interventions (Green and Kreuter, 2005; Sallis et al., 2008; Stokols, 1992). Specific to school AT, the model was adapted to include the following characteristics: individual and family, school-level, neighbourhood and community-level divided into physical, built, and social environments, and policies (Davison et al., 2008). From a planning and implementation perspective, champions emphasized the need to involve stakeholders who can assist at each of these levels as it can create greater buy-in and support. This study revealed that when one or more of these levels does not align, school AT planning and implementation can become quite challenging, such as school policy misalignment and lack of parent and principal buy-in. However, multidisciplinary teams are advantageous for their ability to tackle complex issues across the spectrum of the socio-ecological model through a holistic and integrated approach that merges stakeholders' expertise and can often lead to sustainable AT initiatives (Chillon et al., 2011; Loitz and Spencer-Cavaliere, 2013; Macridis et al., 2016; Mammen et al., 2015).

Although multi-disciplinary teams are important to support increases in school AT, parents are the ultimate decision-makers. Congruent with previous literature, champions in this study indicated negative parental perceptions of safety, culture, habits and attitudes towards AT play a role in decisions to allow children participate in school AT (Carver et al., 2008b; Davison et al., 2008; DiGuseppi et al., 1998; Timperio et al., 2006). In fact, parents who engage in AT themselves tend to have children who are more likely to use AT to/from school. A lack of modeling of AT behaviour may be an important barrier to overcome, especially in communities where pedestrian safety is poorly perceived (Carlson et al., 2014; Davison et al., 2008). Moreover, Putnam (2000) suggests that the personal vehicle is bad for community life as every additional 10 minutes spent commuting results in a 10% decline in community life, such as volunteering and helping with school activities. Furthermore, parents who drive their children out of fear of traffic and safety actually contribute to the perpetuating issue by congesting the roads within and around school property (Carver et al., 2008a). As recommended by other studies, future school AT planning should incorporate education for parents and foster opportunities for participation in planning and development of school AT. Educating parents on the benefits of AT, as well as providing opportunities to engage in the development and implementation processes, may prove effective, as their support is imperative to program success (Faulkner et al., 2010; Loitz and Spencer-Cavaliere, 2013; Mammen et al., 2015).

Finally, in this study, student-led initiatives were revealed to be more successful and sustainable than those initiated by teachers. With any stakeholder engagement, there are varying degrees of educational levels and skills that must be acknowledged, fostered, and leveraged. This is particularly important when engaging children and youth in partnerships for program planning and implementation (Jacquez et al., 2012). Although there is added value, some ASRTS partnerships have faced challenges when supporting youth due to limited resources and turnover (Macridis and Garcia Bengoechea, 2015). Thus, it is important to consider the time, skills, and how each stakeholder can contribute to a project (Berry et al., 2013; Jacquez et al., 2012; Schensul et al., 2013).

This study found that special events/one-off activity days that focused on increasing regular/daily activity and educational programs as the most commonly implemented initiatives. Similarly, a study by Buliung et al. (2011) conducted in twelve schools across four Canadian provinces found that school travel plans often focused on education and promotion, as well as school AT activities and events, such as international walk to school day, winter walk day, and walking school bus day. Moreover, their study reported that the three schools within Alberta implemented the most events (Buliung et al., 2011). Yet, in rural and remote contexts, students may not be able to participate. Unique to this study was the identification of the ways rural/remote schools incorporate AT into the classroom and through the school day, such as weekly walking, walking classrooms, and active ways, other than walking, to travel through the hallways. Adapting AT in this way to serve the whole school is an important strategy to ensure inclusiveness. To ensure all students participate in a walking school bus, another Canadian study within an Indigenous community where majority of students rode the bus, adapted the program by having all school buses drop-off students approximately 0.5 km (0.3 mi) from the school (Macridis, 2015; Macridis et al., 2016). Many of the identified initiatives in this study have been acknowledged in the literature (Buliung et al., 2011; Chillon et al., 2011; Macridis, 2015).

4.1. Strengths and limitations

This study contributes important champions' perspectives to the school AT literature. To the knowledge of the authors, this is the

first study to explore school AT champions' perspectives of planning and implementation of initiatives within the Alberta context. Recruiting champions through partner networks, which are well linked to schools and active living-related organizations allowed for broad reach across the province. Having representation from across the urban-remote continuum also provided greater insight into the unique challenges, as well as the strategies utilized to overcome barriers to support school AT. The mixed-methods approach also allowed for greater understanding of perspectives from champions through the survey and interviews. This study also shed light on priority areas and needs of champions, which in turn will better enable SHAPE Alberta to align their provincial support and resources with the needs of champions.

The low qualification rate for the survey, which subsequently restricted the number of interviews, limits the ability to generalize findings across the province. Recruitment through each partner organization's networks, may have limited our reach, as not all school AT champions would have been subscribed. Our reach could have been further limited due to organizational restrictions of access to online survey platforms. Finally, this study was also limited to the perspective of STP champions. Although valuable, future research should seek out perspectives from the larger school and community STP stakeholder committees to provide a more holistic picture of the process of planning and implementation.

4.2. Conclusions

This study highlights school AT champions' experiences when planning and implementing their school AT initiatives. By reaching out to champions across the province, this study helped to identify the barriers and facilitators faced by school AT champions, as well as key strategies they used to overcome implementation barriers. Based on these findings, current and future school AT champions should prioritize stakeholder participation from diverse backgrounds including community organizations, teachers, parents, and students to help develop and implement AT strategies that are relevant for the school community and context. Although champions persevered with limited supports, findings call for investment to support Alberta school AT champions in areas including promotional/educational materials and support to undertake STP, strategies to support and improve stakeholder recruitment and engagement, and policy change and alignment at the municipal/provincial/federal level policies/regulations, funding, and supports for urban, suburban, rural, and remote communities.

Acknowledgements

The authors would also like to thank the advisory group who provided guidance and support, including: Erin Thompson, Alberta Policy Coalition for Chronic Disease Prevention, Lindsay Wright, Be Fit For Life, Katelynn Theal, Ever Active Schools, and Kayla Atkey, Alberta Policy Coalition for Chronic Disease Prevention.

Human subjects approval statement

Ethics approval was obtained through the Research Ethics Board 2 at the University of Alberta.

Funding/financial disclosure

This work was supported by the Ministry of Culture and Tourism, Government of Alberta's 2016–17 Recreational and Physical Activity Project Grant.

Conflicts of interest

None.

References

- Alexander, L.M., Inchley, J., Todd, J., Currie, D., Cooper, A.R., Currie, C., 2005. The broader impact of walking to school among adolescents: seven day accelerometry based study. *Br. Med. J.* 331 (7524), 1061–1062.
- Berry, D.C., Neal, M., Hall, E.G., McMurray, R.G., Schwartz, T.A., Skelly, A.H., Smith-Miller, C., 2013. Recruitment and retention strategies for a community-based weight management study for multi-ethnic elementary school children and their parents. *Public Health Nurs.* 30 (1), 80–86. <https://doi.org/10.1111/phn.12003>.
- Buliung, R., Faulkner, G., Beesley, T., Kennedy, J., 2011. School travel planning: mobilizing school and community resources to encourage active school transportation. *J. Sch. Health* 81 (11), 704–712. <https://doi.org/10.1111/j.1746-1561.2011.00647.x>.
- Carlson, J.A., Sallis, J.F., Kerr, J., Conway, T.L., Cain, K., Frank, L.D., Saelens, B.E., 2014. Built environment characteristics and parent active transportation are associated with active travel to school in youth age 12–15. *Br. J. Sport. Med.* 48 (22), 1634–1639. <https://doi.org/10.1136/bjsports-2013-093101>.
- Carson, V., Hunter, S., Kuzik, N., Gray, C.E., Poitras, V.J., Chaput, J.-P., Tremblay, M.S., et al., 2016. Systematic review of sedentary behaviour and health indicators in school-aged children and youth: an update. *Appl. Physiol. Nutr. Metab.* 41 (6 (Suppl. 3)), S240–S265. <https://doi.org/10.1139/apnm-2015-0630>.
- Carver, A., Timperio, A., Crawford, D., 2008a. Playing it safe: the influence of neighbourhood safety on children's physical activity. A review. *Health Place* 14 (2), 217–227. <https://doi.org/10.1016/j.healthplace.2007.06.004>.
- Carver, A., Timperio, A.F., Crawford, D.A., 2008b. Neighborhood road environments and physical activity among youth: the CLAN study. *J. Urban Health* 85 (4), 532–544. <https://doi.org/10.1007/s11524-008-9284-9>.
- Chillon, P., Evenson, K.R., Vaughn, A., Ward, D.S., 2011. A systematic review of interventions for promoting active transportation to school. *Int. J. Behav. Nutr. Phys. Act.* 8, 10. <https://doi.org/10.1186/1479-5868-8-10>.
- Cooper, A.R., Page, A.S., Foster, L.J., Qahwaji, D., 2003. Commuting to school: are children who walk more physically active? *Am. J. Prev. Med.* 25 (4), 273–276. [https://doi.org/10.1016/s0749-3797\(03\)00205-8](https://doi.org/10.1016/s0749-3797(03)00205-8).
- Cooper, A.R., Andersen, L.B., Wedderkopp, N., Page, A.S., Froberg, K., 2005. Physical activity levels of children who walk, cycle, or are driven to school. *Am. J. Prev. Med.* 29 (3),

- 179–184. <https://doi.org/10.1016/j.amepre.2005.05.009>.
- Crawford, S., Garrard, J., 2013. A combined impact-process evaluation of a program promoting active transport to school: understanding the factors that shaped program effectiveness. *J. Environ. Public Health* 2013, 816961. <https://doi.org/10.1155/2013/816961>.
- Davison, K., Werder, J.L., Lawson, C.T., 2008. Children's active commuting to school: current knowledge and future directions. *Public Health Res. Pract. Policy* 5 (3).
- Deehr, R.C., Shumann, A., 2009. Active seattle: achieving walkability in diverse neighborhoods. *Am. J. Prev. Med.* 37 (6 Suppl. 2), S403–S411. <https://doi.org/10.1016/j.amepre.2009.09.026>.
- DiGiuseppi, C., Roberts, I., Li, L., Allen, D., 1998. Determinants of car travel on daily journeys to school: cross-sectional survey of primary children. *Br. Med. J.* 316, 1426–1428. <https://doi.org/10.1136/bmj.316.7142.1426>.
- Faulkner, G.E., Richichi, V., Buliung, R.N., Fusco, C., Moola, F., 2010. What's "quickest and easiest?": parental decision making about school trip mode. *Int. J. Behav. Nutr. Phys. Act.* 7, 62. <https://doi.org/10.1186/1479-5868-7-62>.
- Green, L.W., Kreuter, M.W., 2005. *Health Program Planning: An Educational and Ecological Approach*, 4 ed. McGraw-Hill, New York, NY.
- Green Communities Canada, 2004. *Active & Safe Routes to School: Resource Guide*, 2 ed. (Retrieved from).
- Green Communities Canada, 2016a. Canadian School Travel Planning Facilitator Guide. (Retrieved from: http://www.saferoutestoschool.ca/wp-content/uploads/2017/09/STP-Guide-2017_update.pdf).
- Green Communities Canada, 2016b. School Travel Planning Toolkit. Retrieved from: <http://www.saferoutestoschool.ca/school-travel-planning/school-travel-planning-toolkit/>.
- Green Communities Canada, 2017. Ontario Active School Travel Project. Retrieved from: <http://www.saferoutestoschool.ca/oast/>.
- Heath, G.W., Parra, D.C., Sarmiento, O.L., Andersen, L.B., Owen, N., Goenka, S., Lancet Physical Activity Series Working Group, et al., 2012. Evidence-based intervention in physical activity: lessons from around the world. *Lancet* 380 (9838), 272–284 (280).
- Heelan, K., Combs, H.J., Abbey, B.M., Burger, P., Bartee, T., 2012. Evaluation of school transportation patterns and the associated impact on BMI in two midwestern communities. *J. Phys. Act. Health*.
- Heelan, K.A., Donnelly, J.E., Jacobsen, D.J., Mayo, M.S., Washburn, R., Greene, L., 2005. Active commuting to and from school and BMI in elementary school children – preliminary data. *Child: Care Health Dev.* 31 (3), 341–349. <https://doi.org/10.1111/j.1365-2214.2005.00513.x>.
- Heinrich, K.M., Aki, N., Hansen-Smith, H., Fenton, M., Maddock, J., 2011. A comprehensive multi-level approach for passing safe routes to school and complete streets policies in Hawaii. *J. Phys. Act. Health* 8 (Suppl. 1), S135–S140.
- Jacquez, F., Vaughn, L.M., Wagner, E., 2012. Youth as partners, participants or passive recipients: a review of children and adolescents in community-based participatory research (CBPR). *Am. J. Community Psychol.* <https://doi.org/10.1007/s10464-012-9533-7>.
- Leviton, L.C., Snell, E., McGinnis, M., 2000. Urban issues in health promotion strategies. *Am. J. Public Health* 90, 863–866.
- Loitz, C., Spencer-Cavaliere, N., 2013. Exploring the barriers and facilitators to children's active transportation to and from school from the perspectives of practitioners. *J. Phys. Act. Health* 10 (8), 1128–1135.
- Macridis, S., 2015. An Ethnographic Evaluation of a Community-Based Participatory Research Project: Understanding Community Mobilization and Participation in School Active Transportation Initiatives in the Kanien'kehà:ka Community of Kahnawake, Quebec (Doctorate). McGill University, Montreal, QC.
- Macridis, S., Garcia Bengoechea, E., 2015. Adoption of safe routes to school in Canadian and the United States contexts: best practices and recommendations. *J. Sch. Health* 85, 558–566.
- Macridis, S., Garcia Bengoechea, E., McComber, A.M., Jacobs, J., Macaulay, A.C., Members of the Kahnawake Schools Diabetes Prevention Project-School Travel Planning, C., 2016. Active transportation to support diabetes prevention: expanding school health promotion programming in an indigenous community. *Eval. Program Plann.* 56, 99–108. <https://doi.org/10.1016/j.evalprogplan.2016.02.003>.
- Mammen, G., Stone, M.R., Buliung, R., Faulkner, G., 2015. "Putting school travel on the map": facilitators and barriers to implementing school travel planning in Canada. *J. Transp. Health* 2 (3), 318–326.
- Mendoza, J.A., Levinger, D.D., Johnston, B.D., 2009. Pilot evaluation of a walking school bus program in a low-income, urban community. *BMC Public Health* 9, 122. <https://doi.org/10.1186/1471-2458-9-122>.
- Patton, M.Q., 2002. *Qualitative Research & Evaluation Methods*, 3rd ed. Sage Publications, Thousand Oaks, CA.
- Pont, K., Ziviani, J., Wadley, D., Bennett, S., Abbott, R., 2009. Environmental correlates of children's active transportation: a systematic literature review. *Health Place* 15 (3), 827–840. <https://doi.org/10.1016/j.healthplace.2009.02.002>.
- Putnam, R.D., 2000. *Bowling Alone*. Simon & Schuster Paperbacks, New York, NY.
- Roberts, K.C., Shields, M., de Groh, M., Aziz, A., Gilbert, J., 2012. Overweight and obesity in children and adolescents: results from the 2009 to 2011 Canadian Health Measures Survey. *Health Rep.* 23 (3), 37–41.
- Rosenberg, D.E., Sallis, J.F., Conway, T.L., Cain, K.L., McKenzie, T.L., 2006. Active transportation to school over 2 years in relation to weight status and physical activity. *Obesity* 14 (10), 1771–1776. <https://doi.org/10.1038/oby.2006.204>.
- Sallis, J.F., Owen, N., Fisher, E.B., 2008. *Ecological Models of Health Behavior*.
- Salmon, J., Timperio, A., Cleland, V., Venn, A., 2005. Trends in children's physical activity and weight status in high and low socio-economic status areas of Melbourne, Victoria. 1985–2001. *Aust. N. Z. J. Public Health* 29, 337–342.
- Salsberg, J., Macridis, S., Garcia Bengoechea, E., Macaulay, A.C., Moore, S., On behalf of the KSDPP School Travel Planning Committee, 2017a. Engagement strategies that foster community self-determination in participatory research: insider ownership through outsider championship. *Fam. Pract.* 1–5. <https://doi.org/10.1093/fampra/cmx001>.
- Salsberg, J., Macridis, S., Garcia Bengoechea, E., Macaulay, A.C., Moore, S., On behalf of the KSDPP School Travel Planning Committee, 2017b. The shifting dynamics of social roles and project ownership over the lifecycle of a community-based participatory research project. *Fam. Pract.* 1–8. <https://doi.org/10.1093/fampra/cmx006>.
- Sandelowski, M., 2000. Whatever happened to qualitative description? *Res. Nurs. Health* 23 (4), 334–340. [https://doi.org/10.1002/1098-240X\(200008\)23:4<334::AIDNUR9>3.0.CO;2-G](https://doi.org/10.1002/1098-240X(200008)23:4<334::AIDNUR9>3.0.CO;2-G).
- Schensul, J.J., Berg, M.J., Nair, S., 2013. Using ethnography in participatory community assessment. In: Israel, B.A., Eng, E., Schulz, A.J., Parker, E. (Eds.), *Methods for Community-Based Participatory Research for Health*, 2 ed. Jossey-Bass, San Francisco, CA, pp. 161–188.
- SHAPE Alberta, 2001. Alberta's Active and Safe Routes to School Resource Manual. (Retrieved from: <http://shapeab.com/wp-content/uploads/2011/11/ShapeManual.pdf>).
- Sirard, J.R., Alhassan, S., Spencer, T.R., Robinson, T.N., 2008. Changes in physical activity from walking to school. *J. Nutr. Educ. Behav.* 40 (5), 324–326. <https://doi.org/10.1016/j.jneb.2007.12.002>.
- Southward, E.F., Page, A.S., Wheeler, B.W., Cooper, A.R., 2012. Contribution of the school journey to daily physical activity in children aged 11–12 years. *Am. J. Prev. Med.* 43 (2), 201–204. <https://doi.org/10.1016/j.amepre.2012.04.015>.
- Statistics Canada, 2016. Body mass index, overweight or obese, self-reported, youth, by sex, provinces and territories. Retrieved from: <http://www.statcan.gc.ca/tables-tableaux/sum-som/101/cst01/health84b-eng.htm>.
- Staunton, C.E., Hubsmith, D., W., K., 2003. Promoting safe walking and biking to school: the Marin County success story. *Am. J. Public Health* 93 (9), 1431–1434.
- Stokols, D., 1992. Establishing and maintaining healthy environments: toward a social ecology of health promotion. *Am. Psychol.* 47, 6–22.
- TenBrink, D.S., McMunn, R., Panken, S., 2009. Project U-turn increasing active transportation in Jackson, Michigan. *Am. J. Prev. Med.* 37 (6), S329–S335. <https://doi.org/10.1016/J.Amepre.2009.09.004>.
- Timperio, A., Ball, K., Salmon, J., Roberts, R., Giles-Corti, B., Simmons, D., Crawford, D., et al., 2006. Personal, family, social, and environmental correlates of active commuting to school. *Am. J. Prev. Med.* 30 (1), 45–51. <https://doi.org/10.1016/j.amepre.2005.08.047>.
- Tremblay, M.S., Wills, J.D., 2000. Secular trends in the body mass index of Canadian children. *CMAJ* 163 (11), 1429–1433.
- Tudor-Locke, C., Ainsworth, B.E., Popkin, B.M., 2001. Active commuting to school: an overlooked source of children's physical activity? *Sport. Med.* 31 (5), 309–313.
- Tudor-Locke, C., Neff, L.J., Ainsworth, B.E., Addy, C.L., Popkin, B.M., 2002. Omission of active commuting to school and the prevalence of children's health-related physical activity levels: the Russian Longitudinal Monitoring Study. *Child Care Health Dev.* 28 (6), 507–512.
- van Sluijs, E.M., Fearn, V.A., Mattocks, C., Riddoch, C., Griffin, S.J., Ness, A., 2009. The contribution of active travel to children's physical activity levels: cross-sectional results from the ALSPAC study. *Prev. Med.* 48 (6), 519–524. <https://doi.org/10.1016/j.jypmed.2009.03.002>.
- Yee, R., Parisi, D., Hondorp, B., 2007. Creating a citywide safe routes to school program: Pasadena, CA, USA's step-by-step approach. *Ite J.-Inst. Transp. Eng.* 77 (9), 22–26.