"Putting school travel on the map": Facilitators and barriers to implementing school travel planning in Canada

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ABSTRACT

Objective: The objective of this study was to identify facilitators and barriers to effective School Travel Planning (STP) implementation.
Methods: Interviews were conducted with 34 Canadian STP facilitators. Participants were interviewed regarding: i) perceptions of STP success; ii) facilitators and barriers to effective STP implementation; and iii) recommendations for improving STP. A thematic analysis was used to inductively code and categorize data units into themes.
Results: Participants were predominantly female, worked within the health sector, and had implemented STP in the province of Ontario. All facilitators perceived STP to be successful although definitions of 'success' varied. Factors facilitating effective implementation included the well-designed STP model, collaboration between multidisciplinary stakeholders, and the facilitators' leadership role. Conversely, the lack of stakeholder involvement from principals, parents, and students, was identified as a barrier to effective implementation. However, the primary factor that hindered implementation was the lack of time given by funding organizations to implement STP. To observe more effective and sustainable STP interventions in Canada, the facilitators acknowledged the pressing need for multi-level government funding to develop supporting infrastructure for AST, fund facilitators, and implement policies to foster greater AST.
Conclusion: Overall, STP was considered successful in a variety of ways including increased awareness, rates of AST, multidisciplinary collaborations, and school-specific strategies to overcome AST barriers. The study points to a variety of factors affecting implementation. However, there was some evidence to suggest that the existing STP model is likely a short-term 'band-aid' solution to increase AST given the lack of time and sustained funding to support its implementation. Findings further call for greater investment in resources and capacity to support AST interventions like STP, particularly at the Canadian provincial and municipal levels.

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1. Introduction

The World Health Organization recommends children (i.e., aged 5–17) engage in 60 min of daily moderate–vigorous physical activity (WHO, 2010). A recent study of global variation in physical activity (PA) in 15 countries (Tremblay et al., 2014) shows that, overall, children are not accumulating this amount of PA needed for optimal health. Physical inactivity among children is thus regarded as a global pandemic (Kohl et al., 2012). With a focus on Canada, a population-level analysis led by Colley et al. (2011) found that approximately 93% of children are not meeting PA guidelines. With low levels of PA in Canada (and internationally), more research, practice, and policy focus is required in adopting a holistic approach to PA. In addition to *structured* sources of PA (e.g., sports), helping increase *unstructured* sources of PA through active forms of living, such as Active School Travel (AST; e.g., walking and biking to/from school) could help children accumulate greater overall PA (Subramaniam, 2011).

Recent reviews demonstrate AST's contribution in increasing daily PA and helping children meet PA guidelines (Faulkner et al., 2009; Larouche et al., 2014). AST is also associated with decreased BMI over time (Mendoza and Liu, 2014), improved cardio-vascular health

(Larouche et al., 2014), increased alertness and attention during the school day (Martinez-Gomez et al., 2011), greater independent mobility (Carver et al., 2014), reduced stress (Lambiase et al., 2010), and decreased risk of lung disease via reduced air pollution (Wilson et al., 2007; Larouche, 2012).

Despite health and environmental benefits, evidence indicates a temporal decline in AST in many countries over the last five decades (Active Healthy Kids Canada, 2014). The reasons for this decrease are complex. For instance, AST reviews (Garrard, 2011; Sirard and Slater, 2008) have identified factors associated with all socio-ecological levels of influence, including intrapersonal (e.g., age and attitudes), interpersonal (e.g., family demographics), organizational (e.g., school culture), social (e.g., culture of convenience), environmental (e.g., street density/connectivity), and political (e.g., transportation and school siting policies). Therefore, interventions designed to tackle these multiple levels of influence are more likely to facilitate greater changes in AST than interventions addressing only one or two levels of influence (Chillón et al., 2011). In Canada, one comprehensive intervention that is gaining practice and policy attention in addressing the multifaceted factors influencing AST is School Travel Planning (STP).

STP is a collaborative process involving multidisciplinary stakeholders to assess and intervene on AST barriers by means of a documented 'school travel plan.' These stakeholders comprise a STP committee with representation from various disciplines including safety (e.g., police officer), transportation (e.g., traffic engineer), municipal planning (e.g., member of City council), health (e.g., public health nurse), and education (e.g., school administration/teachers, student, and parent representatives). Based on their perspective, the stakeholders play a role in identifying strategies to alleviate school-specific barriers. A key component of the STP model is the designation of an individual as a STP 'facilitator'. These individuals lead the delivery of STP implementation in schools by: helping establish a school level STP committee; collaborating with multidisciplinary stakeholders invested in STP to increase AST levels; organizing monthly/bi-monthly STP committee meetings; developing and updating the written 'school travel plan' document; and assisting in solution identification. In Canada, a STP facilitator may work with a number of schools ranging from two to six. Though STP may appear as a comprehensive and promising approach to increase AST levels in children, evidence regarding its effectiveness is in its infancy.

To date, only five published STP evaluations have been conducted in three countries. In London, England, Rowland et al. (2003) evaluated STP in 21 schools using a randomized control design. Parent-reported surveys ($n=1386$) found no AST increases following the STP intervention one year post-intervention. Similarly, in Auckland, New Zealand, Hinckson et al. (2011) found no change in AST one year following STP implementation among approximately 57,000 students from 56 elementary schools. However, their study, which measured AST using student self-report, showed a modest increase (3%) three years after STP implementation. The findings from these two STP evaluations are aligned with previous research suggesting that school-based interventions may take up to two to three years to see shifts in behavior (Harris et al., 2009).

In Canada, there have been three published studies regarding STP effectiveness. Green Communities Canada (GCC), a non-government organization advocating for sustainable transportation, has led the delivery of STP interventions across the nation. Between 2007 and 2009, STP was pilot tested by GCC in 12 schools across four provinces. Using data from these schools, Buliung et al. (2011) found a 2% increase (student-reported) in AST and a 13% reduction in driving (parent-reported) at one year follow-up. In 2009, the Canadian Partnership Against Cancer organization and Public Health Agency of Canada granted GCC a Coalitions Linking Action and Science for Prevention (CLASP; www.partnershipagainstcanser.ca) project to build upon the pilot study and deliver STP to over 100 schools across Canada. Two STP evaluations have stemmed from this national project. Using student-reported data, Mammen et al. (2013) found some evidence of localized success (1–23% AST increase) in nearly half of the 53 included schools, but overall, there was no change in AST one year following implementation. However, the authors noted that this national evaluation might be misrepresentative when considering that only 53 of the 106 participating schools had complete baseline and follow-up student reported data that were included in the analysis. To provide an additional indication of STP effectiveness on a national scale, Mammen and colleagues (2014) subsequently used follow-up parent-reported data available for all 106 schools. This study showed more promise, with a 17% mode shift from driving to AST one year following STP implementation.

All five STP evaluations (Buliung et al., 2011; Hinckson et al., 2011; Mammen et al., 2013, 2014; Rowland et al., 2003) had primary objectives in quantifying longitudinal changes in AST. Although quantitative changes in AST are of prime interest in any intervention designed to increase AST, it may be less than optimal to rely exclusively on a quantitative approach to evaluate STP efficacy. Instead, a qualitative approach can address study objectives that are difficult to explore through quantitative methods (Jones, 1995). For instance, within the context of STP, qualitative research can provide in-depth insight of the factors influencing effective implementation and the subsequent effect on AST change. Exploring the dynamics of the STP process can also shed light on reasons for AST variation shown in previous STP evaluations in Canada (Mammen et al., 2013, 2014). Though research has qualitatively examined facilitators and barriers to AST among practitioners, (Loitz and Spencer-Cavaliere, 2013), parents and students (Ahlport et al., 2008), minimal research has explored facilitators and barriers of specific interventions that may positively or negatively influence AST change. In support, Crawford and Garrard (2013) recently stated that although "implementing active transport to school initiatives and assessing their effectiveness in participating schools are important, it is also important to examine the program and contextual factors that shape the effectiveness of interventions (pg. 3)." This information can then lead to proposed modifications and recommendations to improve future STP practice.

The individuals that would perhaps have the most in-depth insight into the STP process are the STP facilitators who initiate, coordinate and support STP development and implementation. Accordingly, for this study we sought the perspectives of facilitators directly involved in STP implementation across Canada. The study objectives were to: i) explore the perceived success of STP interventions; ii) identify factors facilitating or hindering STP implementation; and iii) provide recommendations for improving STP practices in Canada.

2. Methods

2.1. The School Travel Planning process

Details on the STP process have been described previously by the co-authors (Buliung et al., 2011; Mammen et al., 2013, 2014). However, as a brief overview, the delivery of the STP process occurs over a series of four steps (Fig. 1). Led by a STP facilitator, step one involves school recruitment and the formation of school-level stakeholder committees. Step two involves the collection of baseline data including student and parent reported travel mode, family and school-level characteristics, and a committee led school-level walkabout. The information derived from the baseline measures and walkabout informs step three (action planning), whereby STP committees develop a
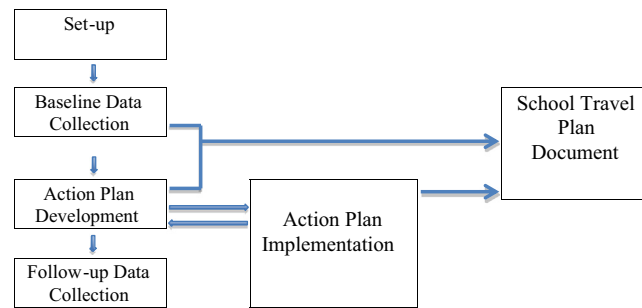
Fig. 1. STP process.

written plan of action for dealing with school-specific issues and challenges for AST. Step four involves strategy implementation and on-going follow-up evaluations. Hence, the 'school travel plan' is continuously updated and modified, acting as a living document that is referred to throughout the STP process.

2.2. Data collection

This qualitative study employed semi-structured interviews with STP facilitators across Canada. Participants were purposefully recruited with assistance from Green Communities Canada (GCC), who provided a list of STP facilitators who had experience in implementing STP since 2009. An email invitation outlining the study purpose, recruitment and data collection process, and study implications was sent to 48 facilitators. Of these, 34 STP facilitators responded to the invitation and volunteered to participate in the study. All but one of these facilitators were involved in the national CLASP STP project which formed the basis of earlier published evaluations (Mammen et al., 2013, 2014). A subsequent email was then sent to the confirmed participants for scheduling purposes. Due to the geographical spread of the facilitators, telephone interviews were conducted. The use of telephone interviews has been accepted as a suitable mode of data collection and is cost-effective and beneficial in coordinating schedules (Lechuga, 2012; Hanna, 2012).

The interviewer followed an interview schedule to guide the conversation. Specific questions addressed: i) perceptions of STP success and definitions of success; ii) factors facilitating or hindering STP success; and iii) proposed recommendations for STP in Canada. All telephone interviews were conducted between September 2012 and June 2013. All stakeholders were sent an information sheet and a consent form to be reviewed prior to the scheduled interview. The document addressed the purpose of the study, reason for invitation, participation rights, risks and benefits of involvement, confidentiality, anonymity, and data security. All participants provided verbal consent to participate in the study and to be audio-recorded for post-interview transcription. Interviews lasted between 15–55 min and in total, approximately 975 min of audio were transcribed. Participants were sent their respective audio-transcription and were given the opportunity to review the content and change or add any content as they wished. The University of Toronto Ethics Research Board granted ethics approval for this work.

2.3. Data analysis

Recorded interview sessions were transcribed verbatim and the raw data were analyzed using a thematic analytic approach. Thematic analysis is a process of induction that involves the identification, coding and organization of themes arising from the raw data with extracts serving as units of analysis (Coffey and Atkinson, 1996). Some key steps of this qualitative analysis included: i) preliminary exploration of the data by reading through the transcripts as a whole and taking notes; ii) coding data by segmenting and labeling texts; iii) using codes to develop themes; and iv) connecting and integrating themes. Text responses were coded according to the questions addressed and reviewed through a continuous process of comparing text segments across respondents, seeking similar or repeated ideas. Commonly occurring patterns of meaning across all participants' narratives were grouped together into categories. After refining main themes, the data were searched for the particular subcategories that give rise to themes, as well as broad inter-relationships among themes. Each respondent was assigned a pseudonym for anonymity and confidentiality. The pseudonyms contain where each facilitator implemented STP, being in either Ontario (e.g., ON1, ON2), in provinces west of Ontario (e.g., W.ON1, W. ON2), or east of Ontario (e.g., E.ON1, E. ON2).

In terms of study trustworthiness (e.g., credibility, conformability and dependability), several methodological considerations and techniques were employed as suggested by qualitative researchers (Lietz et al., 2006; Shenton, 2004; Sparkes and Smith 2013). For example, two forms of member checking were conducted, which according to Guba and Lincoln (1989) 'is the single most crucial technique for establishing credibility' (p. 239), First, participants were given the opportunity to review their audio-recorded transcripts. Second, participants were sent the results section of the manuscript and asked to provide any feedback regarding the authors' interpretations. Five participants responded and all concurred with content accuracy and interpretations. Debriefing of the coding and categorization of themes occurred between the lead researcher and the senior author of the study (GF) on three separate occasions. This practice led to theme refinement and development. Lastly, the first author maintained a dependability and conformability audit trail containing the recruitment email, interview guide, original transcripts, and several iterations of analysis notes which were the basis for the developing themes and subthemes in the study.

3. Results

3.1. Demographics of STP facilitators

Most facilitators delivered STP within the province of Ontario. However, there was provincial representation from all Canadian provinces/territories except Prince Edward Island, New Brunswick, and the North West Territories (i.e., Nunavut). The majority of facilitators was occupied within the health sector, was female, and led STP implementation in either an urban or suburban setting (Table 1). The following results section is organized by the three study objectives.

3.2. Was STP implementation successful?

All facilitators perceived STP to be successful in their respective schools, but it was noted that it "*was only a first step towards success with more success to be had.*" (W. ON1).

STP was really the seed that allowed us to grow the plant here and really allowed us to get the ball rolling.(ON1).

Although all facilitators viewed STP as a success, there was variation in how each defined success. Increases in AST rates were mentioned by several of the facilitators, as "*a direction measurement for success.*" (*ON2*) However, a predominant theme pertained to the

cross-sector partnerships developed among a variety of stakeholders. For example, when probed into defining success, two participants responded:

I would say partially numbers, like definitely seeing how many more people are walking. But also just the involvement amongst the different stakeholders and partners…. it s definitely a better sign than just the sheer numbers. (ON3).

It was beautiful to see the diversity around the table, and it created this nice little friendship between different sectors, and I think that's what we need this day and age to help improve physical activity. (ON4).

In terms of the benefits of multidisciplinary collaboration, facilitators cited the advantages of "*creating awareness and enthusiasm in a school about walking.*" (ON5).

I find it [STP] successful when people engage in discussing about AST and working towards solutions. The beauty of STP is you begin a dialogue. I am always amazed at, from the time we say 'hey we are doing this', that people think about this when it never even crossed their mind before. (W. ON2).

Yeah, it was successful in terms of putting school travel on the map at least, just to even get the words out there and start a bit of dialogue, because before that I don't think people even realized what AST was, or that there were even any other [travel mode] options. (ON6).

An additional theme that emerged when facilitators were defining success related to the completed 'action items'. For example, one facilitator explained how a school-specific barrier was overcome by STP:

One school was being impacted by road construction so this really got the conversation started on how they can better design the bus drop-off area… it was just very congested with that road being closed so with parent traffic, walkers, bikers, and buses all using the same entrance… we were able to redesign it so it's on the other side of the school which just makes it safer and less congested…so, I see that as a success story and a direct result of STP. (ON7).

In summary, the facilitators defined STP success *in "multiple of ways"* (E. ON 1):

I think it was quite successful for a number of reasons. One, it got the school admin, vice principal, and teachers more focused on the issues of AST. Two, it actually increased students walking to school. Three, we were able to provide cycling education at the school as part of the project. Four, we were able to do the community walkabout with the community partners and have discussions with them so now, it's on their radar. So, I would define all that as a success. (ON8).

3.3. What were some factors influencing effective STP implementation?

The common factors cited that influenced the degree of STP success were the: i) nature of the STP model itself; ii) community and school-level stakeholder champions; iv) presence of the STP facilitator; and v) timing and length of implementation (Table 2).

3.3.1. STP model
Several facilitators mentioned the organized structure of the STP model as being "laid out" (ON6), which provides a "tidy system" (E. ON2) and a "blue print" (ON9) for success. More specifically, a major theme facilitating success related to the comprehensive process of STP

Table 1
Demographics of STP facilitators.

Demographics	Number of facilitators
Gender	
Female	27
Male	7
Province	
Ontario	19
West of Ontario	10
East of Ontario	5
School location setting	
Urban/Suburban	31
Rural	3

Table 2
Factors facilitating and hindering STP implementation.

Factors	Facilitator	Barrier
STP Model	∗	
Community-level stakeholders	∗	
School-level stakeholders	∗	∗
Principals/teachers	∗	∗
Students	∗	∗
Parents	∗	∗
Role of facilitator	∗	
Length of implementation		∗

The comprehensiveness was huge. It's not just a onetime thing. It's asking the parents what they think, and involving the community partners within the school. (ON10).

The STP process itself really clarified what the barriers and issues were. Whether they were perceived, whether it was infrastructure, or safety, and working through the creation of an action plan… you know it was really step by step and I think that is really good in a program. (E. ON2).

3.3.2. Community-level stakeholder involvement

In line with how many defined success, a common factor described as facilitating success related to the collaboration among various multidisciplinary community stakeholders who were identified as being *"fundamental to the success of the program."* (W. ON3).

The main benefit [of STP] was getting the discussions between the police, the city, transportation leads, public health, school admin, and parents. So just getting everyone talking about how kids travel to school… are there safety issues? What CAN we do about this? Because before this, no one was really talking about it. (ON8).

We all came together for the goodness of the project…. for the success of the project. I don't think without that commitment, it would have been as successful as it was. (ON11).

The value in connecting various community stakeholders to enable greater AST was identified by several facilitators:

….in one school, we were able to establish that walking zone. There was a church a couple of blocks away, and one of the committee members spoke to the priest, and he allowed the parents to park there so the parents could walk their kids from that point. So that was a success. (ON12).

In [location removed] we're considered the [nickname removed] and in some spots the branches go right to the ground. And during the walkabout, the children pointed out that many kids were smoking, doing drugs, even having sex under there, and this made them scared and uncomfortable. So with our partners from the City, we got them to trim the bottoms of the trees, and I think it makes a huge difference now. We also got a crossing guard from the police department. Another example of how community partners can help with this. (ON10).

3.3.3. School-level stakeholder involvement

Not only are community partners instrumental to success, but *"having champions within the school population is definitely key."* (W.ON4). These school champions were identified as school principals, parents and students. One facilitator stressed the importance of having a committed principal, by differentiating between two schools where STP was implemented:

I definitely think it was more successful at one school than the other. In one school, the principal was completely engaged when we did some cycling education for the kids, she was there the whole time, she even rode with us and the kids in the community, so that whole role modeling piece is amazing. In the other school, the principal wasn't that keen and even though he took part, he just wasn't interested and you could tell from the start he wasn't going to make it a priority. (ON13).

Parent support, and notably their lack of involvement, was also discussed as an influencing factor in shaping STP success since they *"ultimately make that decision* [to allow their child to walk to school or not]." (E. ON3).

There wasn't a big parent side to it. We can have all the pieces in place, but at the end of the day they still have to allow their kids to walk or cycle to and from school. (W. ON5).

The other biggest hindrance are the parents. And the parents just didn't buy in to it…. their perception is it's more convenient to drive… even though we did our external observations, sent home newsletters, did activities with the children… the parents still continued to drop their children off, that live like four houses down from the school. (ON6).

Lastly, in terms of school-level stakeholders, the level of *student* engagement in the STP process was acknowledged as an influential factor regarding STP success as students were seen as essential to *"drive the dynamics to help how the messages get communicated."* (ON13).

….student engagement helped big time, because students took it on their own… they have the best influence on their parents in terms of their decision making. (W.ON6).

Hearing from students themselves contributed to success. Like during the walkabout, we brought students along with us and we asked them to walk the route they take. So when the city council, city transportation staff and police heard about that, and when they see that with their own eyes, they thought that these were some major issues that we do need to address… so having them [students] there just opens up everyone's eyes.(ON8).

3.3.4. The facilitator's role

Also perceived as a key factor to STP success, participants described the role of the facilitator as a *"real advantage,"* (E.ON1) since they were a '*liaison*' (ON14) between the community and school-level stakeholders, *"a dedicated person working with the school"* (W.ON2), and *"somebody on the ground, making sure things were moving forward all the time."* (W.ON6).

…having a STP facilitator was very important, rather just having everyone on the committee to come and pitch in, because everyone has responsibilities and busy jobs. So that was very important in moving forward you know, a coordinator for this. (ON15).

3.3.5. Length of implementation time

In Canada, STP is recommended to be implemented over one and a half years (www.saferoutestoschool.ca). However, in the national CLASP project, it was requested for follow-up data to be collected one year following baseline measures. (e.g., Fall 2010 to Fall 2011). This *"short time frame"* (W. ON2) to identify barriers, implement action plans, and collect baseline and follow-up measures was identified as a main barrier to STP success. The insufficient time given to implement STP was considered as **"***one of the downsides of the project***"** (W.ON5), leading to cases in which the *"action plans were implemented after follow-up data was collected."* (W. ON5).

In terms of time, it was too fast. There was a lot of pressure to just get it done. I really don't think from a behaviour change standpoint that it'll work like that. And it didn't work for us. Because it was too much too fast. (ON4).

…when it comes to changing stop signs or pedestrian walkways, you can't do that in such a short time frame. Even just to get council support might take ten or twelve months. (ON7).

3.4. Next steps for STP in Canada?

A concluding question related to the facilitators' views of next steps needed for STP to be effective in Canada. A recurring theme linked to the pressing need for government (i.e., Federal, Provincial/Territorial, and Municipal) funding to develop the appropriate infrastructure needed to support STP interventions.

Well I don't think anything needs to be changed [with STP], but the biggest hindrance to me is money… I mean, we want sidewalks to change, but that's a money thing, and some of these things are so big that they are out of the control of our committee. It's a provincial government thing, or a federal government thing that needs to be addressed.(W.ON7).

One of the biggest barriers we have is convincing government how important this is, and having them make it as important as someone travelling to work in their vehicles. Government has to recognize that this work is important and to fund it properly. So for me, this is the biggest barrier, in Canada, most of the Non-for profit organizations are running this type of thing, and this is not right. (ON11).

Specific to funding, it was frequently noted that the role of a permanent funded facilitator is crucial if STP is to be sustained as an intervention practice across Canada.

I think the province really needs to step-up and look at how the facilitator's role could be something that's funded and offered. I think there's incredible value and return to the province in terms of savings in health care if they can get kids walking and cycling. (ON2).

This is the position we need to fund. We need people to do this job. Having the facilitator, in the community, that one person you could go to as a point of contact and then their job is to bring together all of the stakeholders. You know if you don't have those two pieces, we know that it won't work because the school can't do it by themselves. (ON11).

Hiring a full time funded facilitator was also discussed as a strategy to alleviate the major challenge of competing priorities within a school setting:

Even with the data collections, schools receive so many requests to do surveys and send information home to parents, it's almost like where does this fall within the agenda. A permanent funded facilitator would help with this issue. (W.ON8).

External to funding, facilitators urged government officials to reassess, recreate and/or develop new policies that would support STP interventions and increase AST. For instance, policies around school transportation need to be reexamined so they do not exclude AST:

The single most significant barrier is that the Ontario Ministry of Education's definition of transportation only talks about bussing. We need the ministry to re-write policies around school transportation to actually make it a true transportation policy and not just a bussing policy. They simply do not recognize AST as a form of school transport, either in policy or funding, therefore the entire culture from the ministry, to the school board, down to the individual and school, is focused on bussing. So we need some percentage, out of the 800 million that the ministry is spending on bussing, that has to go towards supporting infrastructure for walking and biking and for initiatives such as STP.(ON 1).

Additionally, redeveloping policies and reallocation finances around school transportation was acknowledged as a needed next step. For instance, in many Canadian public school boards, elementary school students who live further than 1.6 km from school are eligible for free bussing. Thus, it was suggested to "*push the 1.6 km zone limit and reallocate those dollars to improve the walkability*" (ON16) if AST trends are to increase in Canada. Lastly, school siting decisions also need to be reexamined if STP interventions are to be successful in the future:

On the provincial level, there is a whole another debacle in my mind, in that they keep shutting down schools in small communities and placing them in the middle of nowhere… everyone has to get bussed and no one can walk. That's a policy issue at a provincial level if you want to talk about an important one. I think that needs to be addressed where they are putting schools in totally illogical places only because the land there is cheap, or only because it's a political decision. But it's stupid from an environmental perspective, and from a children's quality of life perspective, it's stupid. (E.ON2).

4. Discussion

This was the first study to qualitatively explore facilitators and barriers of effective STP implementation and within the context of a national implementation. The first study objective was to explore the facilitators' perceptions of STP 'success.' All facilitators deemed STP to be successful in their respective schools, though the definitions of success varied. Increases in multidisciplinary partnerships, completed infrastructure projects, planned events, and AST awareness were all seen as STP successes and important intermediate benefits of the intervention.

The varied meanings of success reflect the comprehensiveness of the STP model that has implications for future STP evaluations and practices. For instance, in addition to focusing on longitudinal AST change which has been the primary outcome of STP evaluations (Buliung et al., 2011; Hinckson et al., 2011; Mammen et al., 2013, 2014; Rowlands et al., 2009), future work can evaluate STP more holistically by capturing the number of developed stakeholder partnerships, school-level infrastructure improvements, and changes in AST culture (e.g., attitudes among students, parents, and teachers) within the school. This can begin the development of a STP 'success checklist' that STP practitioners and researchers can use in the STP model to assess the degree of success at a particular school. The different perceived successes also point to the school-specificity of STP. Though the STP model (Fig. 1) provides a broad framework for implementation, it is important to highlight that the processes of action planning and strategy implementation will depend on school-

specific needs and challenges. Thus, STP does not encompass a 'one-size fits all' approach, but rather a flexible implementation process that addresses the specific AST barriers of a given school.

The second study objective was to identify factors influencing effective STP implementation.

The current STP model was consistently valued by the facilitators as it provided a systematic guide to implement STP from baseline data collection, to solution identification and implementation, and then to follow-up data collection. Specific to the model, participants emphasized the importance in focusing on community and school-level stakeholder involvement. Engaging stakeholders from diverse disciplines, such as education (e.g., school board trustee, teachers, students), health (e.g., public health nurse), transportation (e.g., engineer), and safety (e.g., police), was identified as the backbone of STP success and effective implementation. Specifically, facilitators appreciated the range of strategic ideas provided by the diverse stakeholders in alleviating AST barriers.

Recent qualitative studies have supported the importance of multidisciplinary collaboration in increasing AST (Crawford and Garrard, 2013; Loitz and Spencer-Cavaliere, 2013). In Loitz and Spencer-Cavaliere's study with 19 practitioners (e.g., health promoters, traffic engineers, police, etc) from Alberta, Canada, focus groups revealed that partnerships among schools, community organizations, government agencies, and businesses are critical in encouraging, mobilizing, and sustaining AST initiatives. However, these types of community-based participatory strategies are lacking in the AST literature. In Chillón et al. (2011) review of 14 AST interventions, the large majority of interventions employed promotional and educational 'one off' strategies to increase AST and these interventions were associated with small effect sizes. The reviewers argue that such small effects may reflect the ineffectiveness of one off strategies. Instead, they suggest that acquiring buy-in from community-level stakeholders, which is the basis of STP, may be the essential component in the effectiveness and sustainability of AST interventions. Previous interventions that have focused on developing community partnerships have shown the benefit and value in initiating behavior change. For example, studies have shown the outcomes of multidisciplinary collaboration in PA initiatives including raised community awareness, development of bike lanes, and greater police officer involvement (Middleton et al., 2014; TenBrink et al., 2009; Kong et al., 2009). As Haggis et al. (2013) describe, multidisciplinary teams are advantageous in tackling complex PA issues by using the team's collective wisdom, expansive perspective, and a holistic, integrated approach.

Along with community-level involvement, the involvement of school champions (e.g., principals, parents, and students) in the STP process was considered critical to effective implementation. According to the facilitators, these champions were integral in building an AST culture within the school by increasing the awareness of AST, and assisting with the various promotional strategies. However, the school principals were considered as the anchor to the STP committee, as their commitment towards STP directly influenced the degree of implementation and success.

A recent mixed methods evaluation of an AST program in Victoria, Australia also showed that promoting and implementing an intervention is easier when the school culture is accepting and enthusiastic about AST (Crawford and Garrard, 2013). That study showed a 7.6% increase in AST in the pilot school relative to a comparison school over one year. Based on researcher observations and multiple semi-structured interviews with the program coordinator, evidence suggested that the increase was partially attributed to the highly motivated, committed, and energetic school staff that implemented the program. However, principals and teachers are typically faced with demanding daily schedules within the school setting, and thus, their involvement may not be consistent or existent. Hence, more research is required to understand how best to alleviate this challenge. One method may stem from greater student and parent involvement.

In the current study, participants cited the level of student involvement in the STP process as a facilitator of implementation. The students were believed to be an important agent in helping reverse the AST culture by increasing awareness and promoting the benefits not only to their peers, but to their parents as well. This is consistent with prior research showing that student involvement can serve as a powerful interventional tool in eliciting norm, attitude and behavior change (Valente et al., 2003). Specifically, involving students in the STP committee walkabout was considered invaluable for the adult stakeholders to understand the trip to school through the eyes of children. It is important to gauge children's perceptions of their environments when pertaining to AST, since their experiences and observations with their natural surroundings will uniquely vary compared to adults' (Fusco et al., 2012). Thus, as part of the STP process, consulting children as to their needs and preferences is important to effectively tailor programs (Evans et al., 2013; Holloway and Valentine, 2004) such as STP.

Although community professionals, school staff, and students are important agents in helping increase AST in children, none may have greater influence than the parents. Notably, facilitators claimed that parents must believe in, and value, the benefits of AST if children are to consistently practice this behavior. If not, STP may be viewed as a wasted effort, since parents are the ultimate decision makers when it comes to their children's school travel mode (Faulkner et al., 2010) and without their support, effectiveness of the program may be limited. As suggested in previous qualitative research on AST (Loitz and Spencer-Cavaliere, 2013), this study further recommends future STP interventions and AST initiatives in general to facilitate parental participation in strategy development and implementation.

The aforementioned factors can shed some light on the variability in mode shift reported in the CLASP evaluations (Mammen et al., 2013; 2014). For instance, perhaps the schools showing greater AST change had greater buy-in, involvement, and commitment from diverse community- and school-level stakeholders to tackle the range of barriers impeding AST. Thus, overall, this study recommends STP practitioners to recruit and engage all mentioned stakeholders, given that the study findings indicate that each community (e.g., education, health, transportation, safety) and school-level (e.g. , principal, teachers, students, parents) stakeholder has an equally important role in STP implementation.

Funding agency timelines were the major barrier to effective STP implementation. For the national CLASP project, follow-up measures were requested to be collected one year following baseline (e.g., Fall 2010 to Fall 2011). This time frame could be too short to effectively implement STP. As an example, many participants noted that follow-up data collection occurred prior to any action plans being implemented. This may suggest why Mammen et al.'s (2013) CLASP evaluation, in addition to other STP evaluations (Hinckson et al., 2011; Rowlands et al., 2011), observed no change in AST after 12 months. As supported by the current findings, it may be unlikely to detect any mode change within a year when considering the insufficient time given to conduct baseline assessments, generate AST solutions, and implement all action items identified in the school travel plan. From a research perspective, the artificially compressed implementation time limits the ability to prospectively evaluate STP interventions more rigorously. The majority of STP evaluations have been based on one year evaluations without using control schools or tracking students and households longitudinally. More rigorously designed longitudinal interventions (e.g., 2–4 years) are needed to determine STP's long-term effectiveness.

The study's final objective was to provide recommendations for the sustainability and long-term success of the STP model in Canada. Since STP began practice in Canada in 2007, it has been led and advocated by GCC. Though GCC has made great strides in introducing STP

to practitioners, policy-makers, researchers and schools across Canada, the challenges around sustained funding remain its primary barrier to effectiveness according to study participants. For instance, lack of funding poses major obstacles in building the appropriate infrastructure needed to support AST and hiring full-time funded facilitators. Connecting the community and school-level stakeholders, by acting as a liaison, was acknowledged as an important role the facilitators had throughout the STP intervention and one that is needed if STP interventions are to be a sustainable practice in Canada. To a greater extent, however, the facilitator's role was viewed as essential in ensuring that the intervention was actually implemented. Without this role, it was reported that proper implementation would be extremely challenging given the time constraints of STP committee stakeholders in executing their primary work duties. Similarly in Loitz and Spencer-Cavaliere's (2013) Canadian study, the focus groups identified the need for financial and personnel support to promote and sustain AST programs. Participants described current AST initiatives in Canada transitioning only from grant to grant, with minimal sustained financial and capacity support personnel from organizations.

Broadly, our findings suggest that the STP model in its current form may have more of an influence on the micro (e.g., individual/parent attitudes) and meso (e.g., school culture) level settings of the ecological model (Bronfenbrenner, 1977). However, STP appears to have a less potential influence on broader macro-level barriers relating to the environment (e.g., sidewalk improvements) and policy (e.g., school siting, bus services) that may be more entrenched barriers to AST. From a critical perspective, STP could be considered more of a 'band-aid' solution to the pervasive barriers to AST that stem from the broader environmental and political climate. For STP to be successful in Canada, it must likely transition from being NGO-funded to government-funded. Many of the facilitators urged decision makers at various levels of government (e.g., federal, provincial/territorial, municipal) to coordinate intersectoral approaches to enhancing AST (e.g., transportation, health, education, safety), identify and implement policies that support AST (e.g., school siting, bussing eligibility), re-allocate funds to support full-time facilitators, and invest in resources to make environments more conducive to AST.

This government-led approach has been supported and effective through a similar intervention entitled Safe Routes to School (SRTS) in the US. Between 2005 and 2012, the US Congress enforced the SRTS program as part of the federal Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU). This provided $1.2 billion, and as of 2010, departments of transportation in all 50 states had used portions of this funding to hire state-led coordinators, introduce sidewalk improvements, traffic calming, pedestrian/bicycling access and education programs to promote AST in 14,000 elementary and middle schools (National Center for Safe Routes to School, 2013a, 2014). Recent longitudinal and controlled evaluations of the SRTS program have shown population-level increases in AST (McDonald et al., 2013; McDonald et al., 2014; Stewart, et al., 2014), and decreased injuries near SRTS infrastructure improvements (DiMaggio and Li, 2013). In New York City alone, Muennig et al. (2014) found that SRTS is linked with an overall societal benefit of $230 million as well as 2055 quality-adjusted life years gained. Further advocacy is needed with Canadian government officials across all levels to make the case that investing in AST initiatives are worthwhile from a health, environmental, and ultimately an economical perspective. However, in the meantime, continued efforts are needed at the micro and meso-level of influence to inform, educate, and promote AST among schools, students, and parents.

4.1. Strengths, limitations, future research

This study contributes important knowledge to the STP literature. It is the first qualitative study to explore STP implementation. In doing so, it provides insight into what may be improved in future STP practices. A major strength of this study is the national scope of the participating sample. However, one limitation was the focus on the perspectives of one stakeholder group (i.e., STP facilitators). Thus, caution is required regarding the transferability of the findings for two reasons. First, it is important to acknowledge that these facilitators were paid over the duration of the intervention, and it was their primary role to ensure STP was implemented. Due to their status as 'facilitator' and their time involvement, they may have felt positively predisposed to STP. Second, these facilitators may have overlooked limitations or challenges of STP (e.g., time demand) that other stakeholders (e.g., principal, teachers) may emphasize. Future STP evaluations should extend the current study's methodology by gaining the perspectives of other stakeholders (i.e., school and community-level) to provide a more comprehensive evaluation of STP's benefits, challenges, and factors influencing implementation. For instance, a case study approach would provide a more in-depth and holistic assessment of the STP process by exploring the perspectives of all stakeholders involved. Additionally, the study participants were primarily based in urban and suburban locations and comparisons with rural schools were limited.

4.2. Conclusion

STP was considered primarily successful by starting a conversation about school travel among community and school-level stakeholders that lead to multidisciplinary consideration of potential solutions to promote AST. There were a variety of, but equally important, factors that contributed to success. Practitioners of not only STP, but various other AST interventions should take note and invite stakeholder participation from community organizations, teachers, parents, and students to help implement AST strategies. There was also some evidence to suggest that the existing STP model may be a short-term 'band-aid' solution to increase AST given the lack of time and sustained funding to support its implementation. Findings further call for greater investment in resources and capacity to support STP interventions across all levels of government in order to see increasing engagement in AST. However, the study findings should be interpreted with caution given the focus on STP facilitators. More rigorous assessments of STP are required in 'scaling up' evaluations to use control schools, tracking impact over multiple years, and seeking perspectives from a broader range of stakeholders.

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