Abstract

Physical inactivity among children is a significant public health concern. Active school travel (AST) methods, such as walking and wheeling to school, can be a valuable way to increase children's levels of daily physical activity. In Canada, Active and Safe Routes to School (ASRTS), a national health promotion initiative, has led the campaign for AST through its flagship School Travel Plan (STP) program. At present little is known about the on-the-ground implementation processes that impede or facilitate the success of STPs. Through a thematic analysis of 18 interviews with STP facilitators and 4 focus groups with the larger STP committees, our study evaluates the factors shaping the functioning of STP interventions at ten elementary schools participating in a regional ASRTS program in Southwestern Ontario. Our analysis yielded six themes that have implications for STP implementation and sustainability: 1) accounting for school context; 2) establishing committee capacity and leadership; 3) supporting STP action; 4) responsiveness to external and internal barriers; 5) engaging schools at the grassroots level; and 6) building future champions. We draw from Lewin's Field Theory and discuss the forces affecting STP committees to frame our findings in a way that can be discussed to support the building of efficient, effective, and viable AST intervention environments.

Keywords: Canada; active school travel; children's health; Field Theory; organizational change; physical activity; school travel planning

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1 Introduction

Engagement in physical activity (PA) has important physical (Larsen, Kristensen, Junge, Rexen, & Wedderkopp, 2015) and cognitive (Fedewa & Ahn, 2011) health benefits for children. However, 81 percent of adolescents (11-17 years old) worldwide are not attaining sufficient levels of PA (World Health Organization, 2018). Such low levels of PA are doubly concerning considering that habits developed during childhood can transfer into adulthood (Telama et al., 2005). Active school travel (AST), such as walking or cycling to/from school, has been suggested as a key method to improve PA opportunities for children (Sallis et al., 2006). With children under 13 years old spending 15% of all time during an average week in school (Hofferth & Sandberg, 2001), incorporating AST into daily routines has the potential to not only increase children's PA, but also contribute to their overall health by reducing harmful vehicular emissions in the school area (Bearman & Singleton, 2014).

Participation in AST has many potential benefits for children, including helping children achieve up to 30 percent of the recommended 60 minutes per day of moderate-to-vigorous PA (van Sluijs et al., 2009). Moreover, increases in children's AST have been associated with increased fitness levels (Lubans, Boreham, Kelly, & Foster, 2011), reduced perceived stress (Lambiase, Barry, & Roemmich, 2010), improved mental health (Fyhri & Hjorthol, 2009), and the generation of positive emotions (Ramanathan, O'Brien, Faulkner, & Stone, 2014). However, despite its many potential benefits, AST participation rates have declined internationally (Grize, Bringolf-Isler, Martin, & Braun-Fahrländer, 2010; McDonald, 2007; van der Ploeg, Merom, Corpuz, & Bauman, 2007). Thus, building regular engagement in AST represents an opportunity for public health practitioners and school communities to address children's physical inactivity.

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Factors influencing AST participation are multiple and complex, including distance to school (Emond & Handy, 2012; Larsen et al., 2009; Larsen, Gilliland, & Hess, 2012), child age (Bere, van der Horst, Oenema, Prins, & Brug, 2008; Robertson-Wilson, Leatherdale, & Wong, 2008), and gender (Evenson, Huston, McMillen, Bors, & Ward, 2003; Larsen et al., 2009). For instance, perceptions of traffic safety (Helbich et al., 2016) and social concerns around stranger danger (Panter, Jones, Sluijs, & Griffin, 2010) and bullying (Zwerts, Allaert, Janssens, Wets, & Witlox, 2010) influence children's rates of walking, while environmental variables, such as block density, signalized intersections (Mitra & Buliung, 2012) and street trees (Larsen et al., 2012) are linked to AST. With community-based organizations, policy-makers, and public health practitioners seeking ways to effectively address these multiple, intersecting influences on AST, a myriad of interventions have been implemented globally (Larouche, Mammen, Rowe, & Faulkner, 2018).

In Canada, Active and Safe Routes to School (ASRTS), a national health initiative developed by Green Communities Canada, adapted the school travel plan (STP) model from international best practices and started piloting AST programs in 2006 (Active and Safe Routes to School, 2018a). Central to the STP intervention are facilitators who play a pivotal role in promoting the program to the school community, establishing a larger STP committee of community partners (e.g., municipal officials, parents, police, principals, public health practitioners), and overseeing the development of a school-specific action plan (Active and Safe Routes to School, 2018b). STP action planning is comprised of five steps (see Figure 1). Broadly, STPs promote and raise awareness of AST through what ASRTS calls the five 'Es': education, encouragement, enforcement, engineering, and evaluation (Active and Safe Routes to School, 2018c).

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[Insert Figure 1 here]

Effective AST interventions require cross-sector collaborations. Recent research suggests understanding how cross-sector partners perceive barriers and enablers to active travel assists in improving collaborative efforts (Cole, Burke, Leslie, Donald, & Owen, 2010). To our knowledge, however, only a few published studies have investigated the organizational dynamics of partnerships supporting AST interventions. Macridis and García Bengoechea (2015) provide an overview of different partnerships supporting AST programs and document how interventions are facilitated and operationalized. More pointedly, Mammen, Stone, Buliung, and Faulkner (2015) examined the perspectives of STP facilitators in the Canadian context and reported that collaboration, an organized model structure, and member involvement positively impacted implementation; subsequently, they called for future case studies to examine STPs in greater depth. Atteberry et al. (2016) and Cooper and McMillan (2010), meanwhile, examined the implementation of the Safe Routes To School program in the U.S. context, with the former, more recent paper recommending future work investigate the interactions of members within the partnerships and their implications for intervention implementation. Here, we present a detailed evaluation case study of the organizational features shaping the implementation and sustainability of an AST intervention (the STP model) from the perspectives of stakeholders involved, as well as a first attempt to understand AST intervention dynamics using organizational change theory. To guide this study, we asked: 1) How do STP structure, organization, and resources influence the implementation of the STP intervention? and 2) What features of the STP intervention influence its efficacy and sustainability?

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1.1 Theoretical Framework

Our evaluation examines a fundamental health promotion issue regarding to what extent committees implementing STPs perceive the organizational dynamics and related processes of change to enable and/or constrain the effectiveness of the STP intervention. We draw on Kurt Lewin's Field Theory of organizational change because it offers a conceptual lens by which to analyze group (STP committee) behavior in a particular setting (STP intervention) (Lewin, 1936). Broadly, Field Theory operates on the premise that behavior is a function of a group's environment or 'field', and by considering the environmental complexities and influence(s) we can understand observed behaviors (Lewin, 1936). The field, though, is time dependent and composed of several interdependent 'forces' (Lewin, 1943) that, in our case of the STP program, include internal group characteristics such as management, personnel, strategies, and structure, as well as external characteristics such as the school and surrounding communities. Force field analysis can subsequently be utilized to identify the specific forces that should be abated or fortified to facilitate a group's desired planned change (Lewin, 1998). Thus, with Field Theory and its force field analysis, we make sense of our findings by conceptualizing the environment of an STP committee and considering the relational dynamics among the forces constraining and facilitating its implementation and sustainability.

Organizational change approaches have been applied in a variety of health-related contexts, including health promoting hospitals (Lee, Chen, Powell, & Chu, 2014), public health planning (Thomas, Hodge, & Smith, 2009), and heart health promotion (Riley, Taylor, & Elliott, 2003). Extending an organizational change approach to STP offers the opportunity to investigate how cross-sector partnerships define and respond to AST as a community-level issue, as well as what characteristics, personnel, and strategies participants deem most effective in and missing

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from their programs. Given the research gap on the organizational dynamics of partnerships supporting AST, organizational change theory – specifically Field Theory – can allow us to examine and map a specific intervention environment and assess the infrastructure and capacity required to address its organizational challenges (Batras, Duff, & Smith, 2016). Ultimately, these insights will help generate evidence about best practices for STP intervention implementation and sustainability, which, in the long-run, has the potential to contribute to supporting children's increased and sustained engagement in AST.

2 Methods

2.1 Study Context

This study draws from schools participating in the Elgin-St. Thomas-London-Middlesex-Oxford (ELMO) ASRTS program in Southwestern Ontario, Canada. The ELMO tri-county region is home to 655,366 people (Statistics Canada, 2016) and located approximately halfway between Toronto, Ontario and Detroit, Michigan. School commuting contexts were framed by varying degrees of urbanicity (high density city centres to low density rural areas) and school demographics (student populations <300 to >600). Three schools were located in urban areas, five in suburban locales, and two in rural townships.

2.2 Sample and Recruitment

We recruited a purposeful sample through the ELMO ASRTS program because our goal was to learn in-depth about the ASRTS program, and thus participants with high levels of involvement in the program were targeted. We focused only on schools in their STP evaluation phase in order to gather perspectives on the full implementation of the program. As of December 2017, when data collection concluded, there were 21 elementary schools participating in the

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ELMO ASRTS program, of which ten were in their evaluation phase. Within the region there are a variety of different built environments: one major city-center (London), three regional municipalities (St. Thomas, Strathroy, Woodstock), and several smaller rural communities. Representatives from all ten eligible schools accepted an invitation to participate in this study. At the time of our study, participants had recently completed their follow-up data collection (e.g., surveys, traffic counts, walkabout) and were engaging in knowledge dissemination activities at their schools (e.g., presentations of school results, building summative school feedback reports). Our qualitative evaluation component complements these STP activities by focusing in-depth on insider perspectives of committee functioning and sustainability.

Eligibility criteria included that participants must: (1) have made a significant time commitment to, or helped in the planning of, their STP, (2) have working knowledge of the entire STP process, and (3) be able to thoroughly discuss their respective school's STP initiatives. Only key facilitators (public health nurses [PHNs] and principals) were invited to participate in the interviews as they were responsible for overseeing the entire implementation of their STP and could best speak to the specific details of the program. We selected an interview format to allow these individuals to deeply and critically reflect on their STP experiences (Dowling, Lloyd, & Suchet-Pearson, 2016). Invitations for the focus groups, meanwhile, were extended to all STP committee members deemed to be the most involved by their respective facilitator. Focus groups provided a way to engage with potentially disparate views within the groups (Owen, 2001), as well as facilitate a group dynamic that fostered the emergence of new ideas (Sim, 1998)—both of which are important given our intention to understand the intra-organizational functioning of STP committees. Our participants comprised 33 individuals: 12

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158 PHNs, seven principals, one vice-principal, two teachers, seven parent representatives, one
159 community partner, and three city/town representatives.

160 **2.3 Data Collection**

161 All ten participating schools had at least one facilitator interviewed either in-person (n=3)
162 or over the phone (n=15), while five of the ten participating schools were represented in the
163 focus group discussions held on-site at schools. Both interviews and focus groups followed a
164 semi-structured script to guide the discussion along the chronology of the STP intervention (see
165 STP process depicted in Figure 1). This format allowed a degree of comparability, while still
166 offering flexibility for participants to raise issues most important to them (Axinn & Pearce,
167 2006).

168 Eighteen of 19 potential interviewees accepted to participate. Interviews were conducted
169 by the lead author and ranged from 27 minutes to 1 hour and 14 minutes in length (average
170 approximately 45 minutes). Of the sixteen interviews with facilitators, three were conducted with
171 two PHNs present as in these cases the facilitator received substantial support from a second
172 PHN and it was suggested they also participate. Additionally, we undertook one-on-one
173 interviews with two municipal representatives who were STP committee members; one due to
174 their school being unable to conduct a focus group, while the other had experiences with several
175 STPs which positioned them to provide a level of insight that could be more fully explored in an
176 interview than group setting.

177 Four focus groups were organized and moderated by the lead author with the assistance
178 of a second interviewer, a program representative, who also asked questions. We agreed to have
179 a program representative as the second interviewer to ensure credibility and buy-in for the

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evaluation. Committee members were recruited to focus groups by their STP facilitator(s). All focus groups were approximately one hour in duration, with the longest being 70 minutes. To capture the school-level experience, each focus group consisted of four to eight school-specific STP committee members. On the recommendation of the facilitators, one focus group combined STPs from two schools due to their close geographic proximity and having frequently collaborated throughout the STP process.

All interviews and focus groups were audio recorded and transcribed verbatim by the lead author. Data were collected from October 2016 through December 2017 coinciding with the final schools from the initial STP program rollout having begun their evaluation phase. We altered any revealing information in quotations and used codes indicating committee member role to locate quotes (CP=Community Partner, CTR=City/Town Rep., PA=Parent, PR=Principal and PHN=Public Health Nurse, T=Teacher). This study was approved by the Non-Medical Research Ethics Board of the University of [omitted for review] (NM-REB #: 105635).

2.4 Data Analysis

We utilized Braun and Clarke's (2006) thematic analysis process in which we began by deductively coding each transcript, of both interviews and focus groups, allocating large segments of text into five categories that corresponded with the outcomes of interest: (1) organization, (2) resources, (3) structure, (4) efficacy, and (5) sustainability. Next, we inductively coded within these deductive categories to identify recurrent ideas. We followed an iterative and systematic process whereby the definitions of codes were refined, merged, and separated as needed, ultimately resulting in the generation of 30 robust codes with clear and discrete definitions. Next, we developed an intermediate set of concepts from these codes and engaged in another iterative process wherein we visually mapped the relationships between

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concepts in order to create our final themes (n=6) and show that each contains contrasting forces to navigate (see Figure 2, "+" = facilitating force, "–" = constraining force).

[**Insert Figure 2 here**]

We employed several techniques to ensure rigour in our analysis. First, team members (A.B. and S.E.C.) critically discussed their differing interpretative possibilities of the findings at key points in the analysis, employing what Smith and McGannon (2017) describe as a practice of 'critical friends'. As an additional part of the 'critical friends' technique, on three separate occasions, a note taker was present during phone interviews to provide analytic feedback to the interviewer and engage in a hermeneutic discussion regarding the important topics covered. Next, the lead author engaged in reflexive processes to document, identify, and challenge the constructions of knowledge that they interpreted in the findings (Cowan & Taylor, 2016), including writing and maintaining detailed reflexive notes to critically consider researcher positionality, as well as evaluating the note taker's feedback to track new, emerging ideas and concepts. Last, to strengthen the 'confirmability' of the results, an audit trail was also maintained throughout the process of the study to track how and why various decisions were made (Baxter & Eyles, 1997).

3 Findings

Our findings discuss the range of forces and relational dynamics that shape an STP's environment and viability from insiders' perspectives, as well as point to crucial considerations for best practices in developing and implementing an effective STP. Below, our findings are organized according to six themes divided across two central levels of the STP model:

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implementation and sustainability. As illustrated in Figure 2, within each theme are results reflecting both facilitating and constraining forces within an STP environment.

3.1 Implementation

3.1.1 Accounting for School Context

Our participants stressed the importance of conducting a thorough evaluation of school context during the initial STP set-up phase. Participants frequently cited assessing school context prior to STP introduction as necessary for identifying school readiness and buy-in. As one facilitator explained, ensuring readiness to build a viable committee and obtain support from administration is critical for long-term prospects:

> I think that really having school buy-in and having an STP committee that has your parents on it, a teacher, and the school principal or VP on it, I think that's what you need. If you don't have that, I don't know if school travel planning will be as successful and as sustainable [...] I think that, even as a facilitator, we come and go at schools [...] if the principal changes, you still have that core group that is still there and still passionate about it. (PHN2)

Other facilitators echoed this, contending that schools exhibiting initiative to support AST in their set-up phase were those that developed STP committees with a diverse spectrum of committed members.

Several STP facilitators also noted the importance of precisely locating the motivation for the STP program in the context of school priorities. Deciphering whether a school's initiative to participate in the STP program was internally driven (motivation comes from administration) versus externally driven (PHN drives the program) were interpreted as important forces affecting STP functioning. A few participants who felt a weak relationship with their school and that their STP was externally driven by a facilitator from outside the school administration elaborated that

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the resulting program milieu invited complacency and overreliance on the facilitator. As one PHN explained, this culminated in straining the sustainability of their STP:

> I feel that unless the PHN keeps supporting the school with all of the promotional items, I don't think much will happen at the school with the STP process. I think it has got to be driven by the PHN for this particular school [...] The nurse makes the announcements, writes the newsletter, and gets it out to the school [...] without a super engaged nurse leading that, I don't believe that the school, with their current administration, would do it independently. (PHN12)

When postulating ways to avoid such situations, a few facilitators expressed that identifying and subsequently building relationships between the STP committee and a school's "passion" (PHN7) (e.g., physical activity) could allow for the program to merge with an issue already carrying weight within a school administration, thus helping to internalize motivation for AST.

3.1.2 Establishing Committee Capacity and Leadership

Participants highlighted the intense capacity demands placed on facilitators as a constraining force. Facilitators, in particular, regularly relayed that heading an STP committee and organizing an STP action plan was "a huge learning process" (PHN5) and "an education piece" (PHN6), and often emphasized the substantial time commitment required of coordination tasks. Among many other duties, critical tasks included: balancing competing priorities within the committee, delegating assignments appropriately, and facilitating committee communication. Facilitators painted a picture of the weighty totality of their tasks, with one PHN explaining how the practical realities add up:

> They [the facilitator] do all the behind the scenes work of taking information from the parent surveys, traffic counts, and designing the walkabout [...] the actual making of it [the action plan] into something readable and tangible is the STP facilitator […] If they weren't there, that action plan would never actually be something to look at. (PHN4)

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Overall, the demands of the facilitator role was acknowledged to be one of the greatest challenges and potential liabilities for program success.

Participants also drew attention to the importance of leadership quality in developing a well-functioning STP committee, with an ideal leader seen as possessing genuine enthusiasm and drive. One facilitator, who helped support multiple STPs, encapsulated this perspective when they explained how leadership character is a fundamental force for the success of the STP process:

> [Who the] facilitator is, can, in my experience, make or break the success of the school travel plan. I think it is very important that they believe in the program. If it is just kind of a thing that they have to do – as in that is what the school has asked for and they are in that role – I don't find that it is nearly as successful as someone who really believes in the program, gets it, is passionate about it, and drives it and makes it happen. (PHN4)

Further supporting this notion were comments from participants who sensed their STPs lacked leadership or strong relationships between the facilitator and larger committee, resulting in poor organization and low program efficacy that ultimately hampered their program's efforts.

Like facilitators, many members of the larger STP committees posited that their roles benefited from clear definitions and expectations. There was consensus among committee members that having a defined role was essential to effectively contribute to their STPs and for the overall STP functioning. For example, one teacher's struggles to contribute to their STP stemmed from a lack of clarity regarding their specific role, as they explained "sometimes it can be overwhelming when you're looking at the big picture. That's how it was when I started, because I was trying to do it all and I couldn't, so I just felt defeated. But this year was like, 'Hey, I did 'Winter Walk Day' and it was cool. I did another promotion day [...] it was awesome'" (T2). By choosing to participate in specific events, this participant was able to carve

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297 out a discrete role that allowed them to strategically focus their efforts and contribute in what
298 they viewed as an effective manner. It was ultimately suggested that clearly defining roles and
299 expectations at the beginning of an STP, especially to establish the expected contributions of
300 each committee member, is important in building an enterprising STP environment.

301 ### 3.1.3 Supporting STP Action

302 When deliberating on committee characteristics and methods that best support the
303 implementation of STP action plans, participants often spoke of the role of key personnel. On the
304 one hand, public health unit supports (e.g., second PHN), parents, city/town representatives, a
305 research partner, and community organizations (e.g., cycling skills organization) were frequently
306 singled out. However, municipal representatives were especially valued as crucial facilitating
307 forces for bringing AST issues to high level decision makers and pushing to create changes:

308 > With our committee we had councilors and transportation people. We had a lot of
309 > infrastructure stuff done on behalf of this committee; we had a sidewalk outside the
310 > school [upgraded] [...] We had city councilors come out and look at the snow removal
311 > [...] [they created] the plans to make a priority for snow removal in school areas. (PHN3)

312 Conversely, there were several desired partners who were reportedly absent. Participants
313 identified schoolboard facilities representatives and trustees, busing consortium representatives,
314 students, and local neighborhood residents as additionally needed partners, principally because
315 they were seen as having the ability to open up more avenues to affect change and support a
316 wider array of action items.

317 One of the most important facilitating forces for success in action plan implementation
318 our participants identified was the need for committees to establish an effective operational
319 framework. Specifically, establishing a schedule of focused meetings was seen as crucial for
320 attaining committee goals. Participants articulated that, ideally, issue-specific “ad hoc

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subcommittee[s]" (PR4) that would meet only for select issues are useful to improve overall efficiency. This was seen to limit the demands placed on committee members by only requiring them to attend their relevant meetings, thereby allowing each member to place attention on the action items pertinent to them rather than the entire action plan. Speaking about their efforts to promote AST education, one community representative emphasized how this schedule allowed them to focus their efforts "to get out and educate the community on some of the various traffic concerns and issues [...] [and] to engage people" on AST topics (CTR1). While it may seem mundane, the meeting schedule was said to be a key force in helping to build an environment that maximizes (or undermines) the efficiency and organization of STP committees.

When speaking about action plan implementation, participants also expressed extensive support for utilizing a collaborative approach that leverages committee expertise and facilitates the building of responsible but supportive intra-committee relationships. For instance, one facilitator directly credited the success of their STP to their committee's approach, explaining that it was highly beneficial to have the diversity of community partners "because you have so many experts. It wasn't just one person that knew everything, but it was basically acknowledging that everyone had important information to share, they had different opinions" (PHN1). A parent added that this also helps to ensure responsibility and direction among the committee, commenting that they "liked having the diverse group – you got input from so many people [...] Like it's laid out so everybody knows their piece. I like that you can follow up and then meet again and say, 'Okay what are the next steps? Who's doing what? Where's the next project?'" (PA3). A collaborative approach was seen as a unifying force in the program.

Participants also cited the importance of how committees situated their intentions underpinning STP action items. Going back to the five 'Es' of ASRTS, participants largely

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viewed the rationales behind education, encouragement, and enforcement action items as supportive of their STP goals and appropriately implemented; however, engineering actions were more controversial. This was due to a common misconception that the visibility of infrastructure modifications was positively correlated with AST behaviour and perception changes, which could create unrealistic program expectations. One city representative described this conflict between community perceptions and engineering realities:

> Engineers are told not to use all-way stops because signage doesn't necessarily slow down speed. The perception is that you have got speeding, but from where the signs are warranted they [the drivers] actually travel faster mid-block to make up time. [This was indicated] and then there was a comment about speed bumps. Again, you can put speed bumps in but it will displace the people that want to [speed]. If the city is set up in a grid pattern, it will displace the speed to other streets. So I don't know if that will resolve the issue. (CTR3)

Other municipal representatives reiterated the importance of AST education, and concluded that supporting or advocating engineering action items cannot be viewed as a blanket solution for AST issues as it could foster the development of future constraining forces (e.g., false perceptions).

3.2 Sustainability

3.2.1 Responsiveness to External and Internal Barriers

Our investigation into STP sustainability found that timely navigation of both external and internal barriers is a crucial force for a functional STP committee environment. The greatest external barriers cited by committee members were parent-related, especially misgivings about the capacity of the STP program to change parental attitudes. An illuminating example of this was captured in one participant's experience enforcing illegal parking, during which they noted having parents "react very badly to me" (CP1) and the principal receiving complaints despite their STP focusing heavily on parental education. Tensions related to parental support for the

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370 STP was a consistent concern raised by our participants, with one PHN plainly explaining
371 "behavior and attitudes are still very poor in the parking lot, people are still parking in the
372 handicap parking, you know the designated parking spots [...] parents are still sitting there [on
373 the side of the street] waiting for the kids – there still is lots of work that needs to be done"
374 (PHN6). Ensuring timely responses to these documented issues and increasing parental
375 education, especially early on in an STP, were suggested by participants as potential future
376 remedies.

377 When focusing inwardly on the committees themselves, participants identified the
378 greatest internal barrier, or constraining force, as facilitator turnover, primarily due to the
379 logistical issues that ensued. Consequences of turnover were swift and ruinous, and could result
380 in the STP plan being "put to a halt more or less" (PHN3), as happened in one case where both a
381 principal and vice principal left a school at a critical point in the STP action plan. Several others'
382 accounts confirmed that the time, resources, and education commitment to get a new facilitator
383 up-to-speed was a daunting task to achieve mid-STP. Buy-in also resurfaced as an internal
384 barrier as participants contended that poor committee buy-in resulted in apathy towards AST,
385 low attendance at meetings, and a sense of the program as a formality or 'window-dressing'
386 without real tangible outcomes. Ensuring buy-in and properly assessing a school's initiative re-
387 emerged here as crucial forces to assist in weathering a major loss, or guarding against member
388 apathy.

389 **3.2.2 Engaging Schools at the Grassroots Level**

390 Participants emphasized the importance of taking a 'bottom-' or 'ground-up' approach to
391 maximize STP sustainability. The STP model of building a program around school-specific
392 concerns and targets, rather than following a 'top-down' structure with scripted strategies, was

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favored by many participants as a way to maximize program efficiency. Participants reasoned this approach was conducive to developing crucial 'inside champions' (e.g., principal or teacher) who, as one PHN reflected, helped set a strong precedent for STP sustainability by leveraging their relationships: "the principal, they are the gatekeeper. They identified a readiness and basically just highlighted the importance of the [program to] staff. That point – if it [the STP] is something that the principal is encouraging – the staff often, in my experience, will support what they [the principal] do" (PHN1). Champions were also viewed as a key facilitating force in pushing a more proactive STP mindset at their schools.

Another important grassroots characteristic for many participants was the data collection processes, particularly at baseline data collection in the STP set-up phase where participants identified valuable opportunities to build engagement within STP committees. Walkabouts, in particular, were reported as an experience that exposed members to the complexities of AST, and where the issues "came alive" (PHN2). One facilitator explained that this exposure helps to get "all those community partners – the parents, the school, everybody – together and see [the concerns], that's where the ball really starts to get rolling in the action plan […] that to me engages everybody" (PHN2). One parent representative expanded on this notion adding to it the educational value of the walkabouts:

> When we did the walkabout we were chatting with the city representative about traffic light safety and about pressing the button, and there were things I learned [...] That education that I received, it was like, 'Okay well there is obviously other people that don't know this' [...] I thought that was a strength because we learn something and then you learn what other people maybe should be knowing as well. (PA1)

Traffic counts, however, were much more contentious. Some participants believed that the traffic counts helped bring visibility to the program at their school, noting experiences of onlookers

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being inquisitive and supportive. Others struggled to see a greater purpose and detailed how community members were not happy with the observations and questioned their motives.

Long-term, participants also felt the grassroots approach was preferable because many claimed that, upon the completion of their STPs, AST was an issue requiring a genuine culture change. The concept of culture change, in its essence, was articulated as a matter of first increasing awareness about the complexity and timeline of AST issues, and then building a school-wide perspective that emphasizes patience. A city representative, using their committee as a small-scale example, argued that a bottom-up approach facilitated community connections with parents which helped build a realistic perspective of AST:

> There is a high degree of appreciation I feel from the parents that participate in the whole thing. They realize that there has been a solid effort put forward to try and make it work [...] It's been that way the past 25-30 years where everybody is driving their kid to school – it is not an easy task to take on and try and reverse that trend. (CTR1)

In hindsight, many participants acknowledged changing culture and perspectives represented potentially the greatest constraining force to building support for AST at their schools, primarily because of the social norms and perspectives that come with living in an auto-oriented society.

3.2.3 Building Future Champions

Building program champions was a central idea in our participants' views on developing sustainability with respect to an STP environment. Participants proffered two important functions for such individuals: being a proactive supporter of AST issues in their community, and a recruiter who identifies new members "who are doers" (PA4). To the former, many participants suggested that building more proactive proponents of AST may be a key force for improving buy-in, developing a clearer sense of direction or purpose for the STP, and advertising the program to schools. Recruiting 'doers' was commonly mentioned as a method to help drive

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change, with one principal elaborating that encouraging active involvement and building supportive parent-school relationships is a desirable characteristic for committee members:

> It is about [...] the doing versus the volunteering. So we might not have as many volunteers as we would like for some of the things [...] but when we built it the parents participated. They saw the value in the walking school bus, they were going to participate you could see it. They have seen the value in the work that we have done in the traffic, and they [...] are participating. (PR5)

To support the development of champions, participants made clear that cultivating 'doers' through showcasing meaningful changes could also be a future best practice.

4 Discussion

Collectively, our findings surface a number of STP best practices regarding program implementation and sustainability that can inform public health efforts supporting AST interventions. We return to Lewin's Field Theory of organizational change to ground our suggestions for improving STP, and more broadly AST, intervention environments in our discussion below. To illustrate the implications of our findings, we adapted Burnes and Cooke's (2013) Lewinian life space model and topologically mapped our discussion of the STP committee environment, including the facilitating and constraining forces, in relation to Field Theory (see Figure 3).

[**Insert Figure 3 here**]

4.1 AST Intervention Environments: Significant Forces Affecting Implementation

First, our study demonstrates the importance of the set-up phase in overall program functioning. Similar to other interventions which reported incorporating AST within a larger community project, such as community activity promotions (TenBrink, McMunn, & Panken, 2009), our study likewise indicates that the level at which the mechanism for change originates,

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top-down versus bottom-up, is significant for its long-term success. Although a review by Macridis and García Bengoechea (2015) found that both bottom-up and top-down approaches have been previously employed in AST interventions to varying degrees of success, our findings firmly support utilizing the bottom-up approach. In particular, our findings confirm what the existing literature shows about this approach as advantageous for the mobilization of partners and resources in AST (Geraghty et al., 2009; Henderson et al., 2013).

The important forces to focus on and strengthen in the nascent stages of an AST intervention, from a Field Theory perspective, are thus those that create an 'active school environment', specifically school readiness and buy-in. Assessments of school motivation, prospective committee viability and diversity, and the potential to merge AST with a school's existing priorities are all important characteristics to consider and identify prior to program implementation. For example, if a school community exhibits a low level of internal motivation to help facilitate and support a program, preferring to be an ancillary player, we would suggest such an environment is passive and lacks the critical characteristics of a competent program. Instead, to cultivate an 'active school environment', future interventions should focus their initial efforts on expanding recruitment activities to community members not typically represented on STP committees (e.g., local residents and schoolboard representatives), find ways to engage parents in their program, and assess school priorities to see if AST can be incorporated into existing initiatives.

Regarding the implementation of AST programs, our study corroborates the importance of leadership and building strong intra-committee relationships. Weigand's (2008) review of AST literature initially noted the importance and influence that leaders, such as local government and school facilitators, have in future intervention implementation and monitoring, and our

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findings suggest analogous ideas. In fact, our findings go a step further and indicate that leadership can be instrumental in helping to establish a program precedent. However, our study also points to the implications of weak leadership. Recent research has reported issues such as missing partners (Heinrich, Aki, Hansen-Smith, Fenton, & Maddock, 2011) and community resistance (Deehr & Shumann, 2009) to AST interventions. In our evaluation, these issues were mentioned alongside instances of tenuous leadership and weak relationships. Given our results around the intensity of facilitator capacity demands, our research, like others (e.g., Hendy & Barlow, 2012), highlights the relationship between adverse conditions and leadership outcomes, specifically in relation to successful program implementation.

With collaboration being suggested to be a positive force in addressing AST issues (Mammen et al., 2015), and Field Theory similarly noting the centrality of 'group dynamics' with respect to change (Burnes, 2004), we suggest that partnerships prioritize forces that promote cross-sector approaches, the development of a robust operational framework, and intra-committee relationship building during implementation. These priorities can help to foster an environment for partnerships that reduces facilitator capacity demands, thereby limiting potential liabilities (e.g., poor communication, organization). Our *supporting STP action* theme spotlighted group-based strategies, like clearly defining the roles and expectations for all committee members and developing a focused meeting schedule with issue-specific subcommittees, which could potentially be effective in this respect. Additionally, we advocate that future partnerships build several opportunities into their frameworks for AST education to address perception barriers. Walkabouts, for example, were widely supported for their ability to spur the engagement and education of individuals in the school community during the STP process. Engagement has been cited as an important aspect in AST partnerships (Kennedy &

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Mammen, 2017), and by building a partnership schedule or framework with more opportunities for engagement, we contend that this can also serve as a viable method to allow for community partners to educate each other and parents on AST, as well as build supportive relationships within the committee that help can help protect against barriers such as apathy.

Another important force in program implementation is operational barriers. Parental behaviors such as unsafe parking (Hinckson, 2016), attitudes concerning social support (Panter et al., 2010), and perceptions of neighborhood safety (Carver, Timperio, & Crawford, 2008) are noted AST concerns shared by our participants. We posit these issues also act as external barriers in relation to AST partnerships during intervention implementation. While other research may advocate that engineering strategies are best to support AST (Ewing & Dumbaugh, 2009), our results suggest a broader sweeping program to creating an environment more conducive to minimizing such barriers, specifically highlighting the potential of using a bottom-up, grassroots approach. As our findings indicate, the bottom-up approach may help motivate partnerships to spotlight local AST issues and drive the production of AST champions who can prioritize whatever initiatives (e.g., crosswalks to improve walkability) are most pertinent to their school. Like Mammen et al. (2015), we found that champions were seen as critical to supporting AST for their ability to help develop program direction, recruit new members, and improve buy-in. With a wider and more passionate group supporting AST, future partnerships may have more reach in promoting the importance of AST as a worthy cause and changing parental concerns and perceptions.

An important facilitating force for AST partnerships to further explore, as pointed to by its near absence in our findings, is the role of students. Lacking student involvement is not new (e.g., Henderson et al., 2013); however, our participants did not identify a lack of student

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perspectives in the program as a barrier, but rather just a missing element. As per Field Theory's notion of mediating forces, this might represent a potentially critical new characteristic that partnerships could consider engaging to help increase their reach. Students may hold the potential to more effectively invoke pressure upwardly on parents and laterally on their peers to adopt AST behaviours. Importantly, the student-student relationship has been found to have a significant impact on motivation in other settings, such as academic goal pursuit (Wentzel, Battle, Russell, & Looney, 2010). The potential of this relationship dynamic to be translated to AST in order to improve student motivations, as well as to better understand their perspectives on effective programming, should be explored. Incorporating students and, if possible, generating student AST champions may be another method by which partnerships can extend their reach.

4.2 AST Intervention Environments: Forces to Improve Sustainability

Our findings indicate that intervention sustainability has much to do with perceptions and social norms. Like the Atteberry et al. (2016) and Mammen et al. (2015) studies, participants reported positive feelings regarding program efficacy; however, our participants were aware that societal perceptions had an important, adverse role in the larger AST participation discussion. The influence of an auto-oriented culture on travel mode decisions has been previously documented (Martinez, Ayala, Arredondo, Finch, & Elder, 2008), and many of our participants noted that the long-term nature of AST made it an issue that was difficult to properly address and convey to their communities. With a more thorough understanding of the scope and complexity of the issue, AST partnerships would benefit from framing AST as likely a slow process that needs to be facilitated by experienced change agents on STP committees.

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Here it is important to consider that Lewin (1947) described the nature of change in Field Theory as ephemeral, suggesting that after a change (i.e., the intervention) it is not long until group behavior returns to its previous state. Therefore, based on the proactive sentiments documented in our findings, we offer two broader suggestions for future partnerships to guard against regressive behaviors. First, partnerships should prioritize efforts to foster a high level of communication with parents. If partnerships establish, early on, a proactive agenda to inform parents about the benefits and safety of AST, they may pre-empt negative parent perceptions and skepticism. Second, it is desirable to clearly establish the ownership of an AST intervention from inception. Having discernable ownership of the intervention within the STP committee, ideally by parents or champions, may help to establish an explicit mission for the program (e.g., advocacy, educational). A clear directive may also assist in focusing strategies on which community partners to recruit, resources to acquire, and methods to prioritize to effectively engage school communities.

4.3 Limitations

There are a few limitations to our study. This study investigated an AST intervention model that was primarily implemented in higher socioeconomic status (SES) neighborhoods. In only one instance did facilitators define their school as high-needs or high-risk, thus considerations and insights regarding potential equity issues are limited. We engaged a diversity of perspectives, but were only able to include a few municipal and community organization (e.g., non-profits) representatives as one non-profit organization closed and several other individuals had moved on to other roles. Consequently, while this study aimed to achieve a high level of rigour in its methods, an important implication to note here is that aspects of the organizational culture discussed in this study may be specific to the Canadian context. This must be taken into

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account in terms of the generalizability of our findings to other cultural contexts which may include different stakeholders.

5 Conclusion

To our knowledge, this is the first in-depth case study regarding the organizational dynamics of a regional partnership supporting AST via STP, as well as the first attempt to frame STP dynamics by drawing on an organizational change theory. The six themes we identified in our analysis demonstrate that STP success is underpinned by a diversity of factors that range in scope from operational (e.g., meeting structure) to cultural (e.g., buy-in). This makes clear that in conceptualizing a plan for STP success, it is just as important that seemingly mundane aspects of committee operations be given just as serious consideration as is taking into account the specificities and needs of the local school context. Based on these findings, we suggest that public health and community interventions aimed to support AST should i) emphasize the importance of thorough pre-implementation assessments and build 'active school environments', and ii) foster the development of a collaborative approach, a robust operational framework or schedule, and a school-wide pro-AST culture. For future study, investigating children's perspectives of AST interventions, ways to develop student champions of AST, and equity initiatives all hold significant potential to influence future programming.

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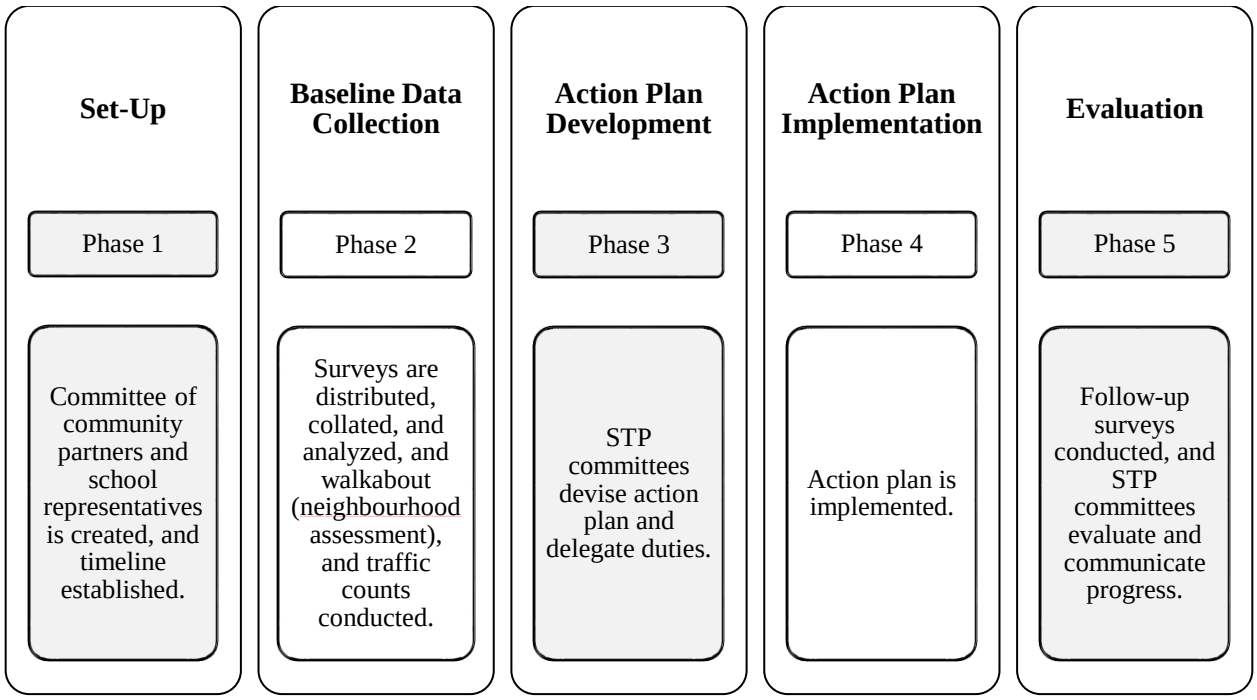
Appendices

Figure 1. School Travel Plan Intervention Model



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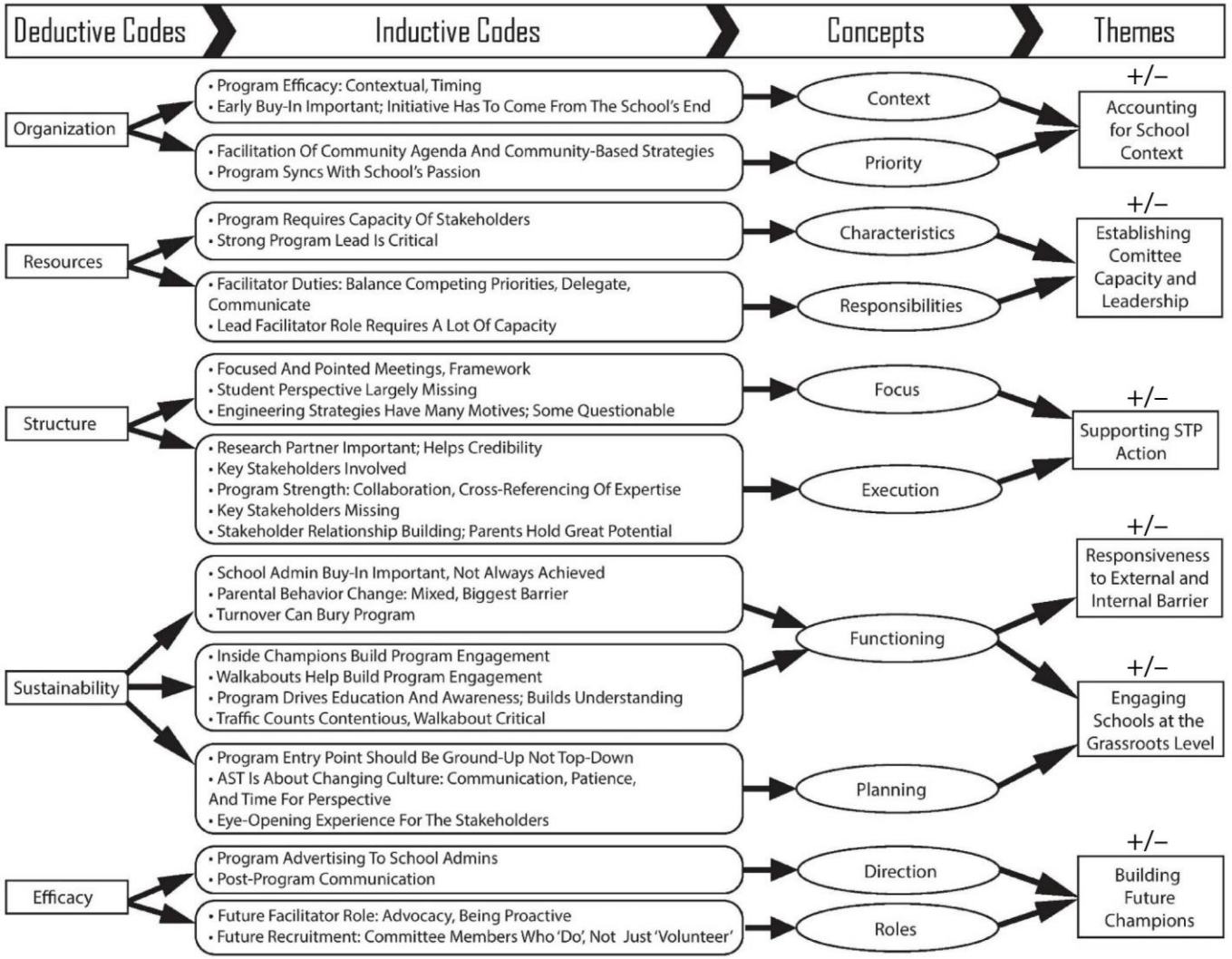
794 **Figure 2. Analysis and Code Map**



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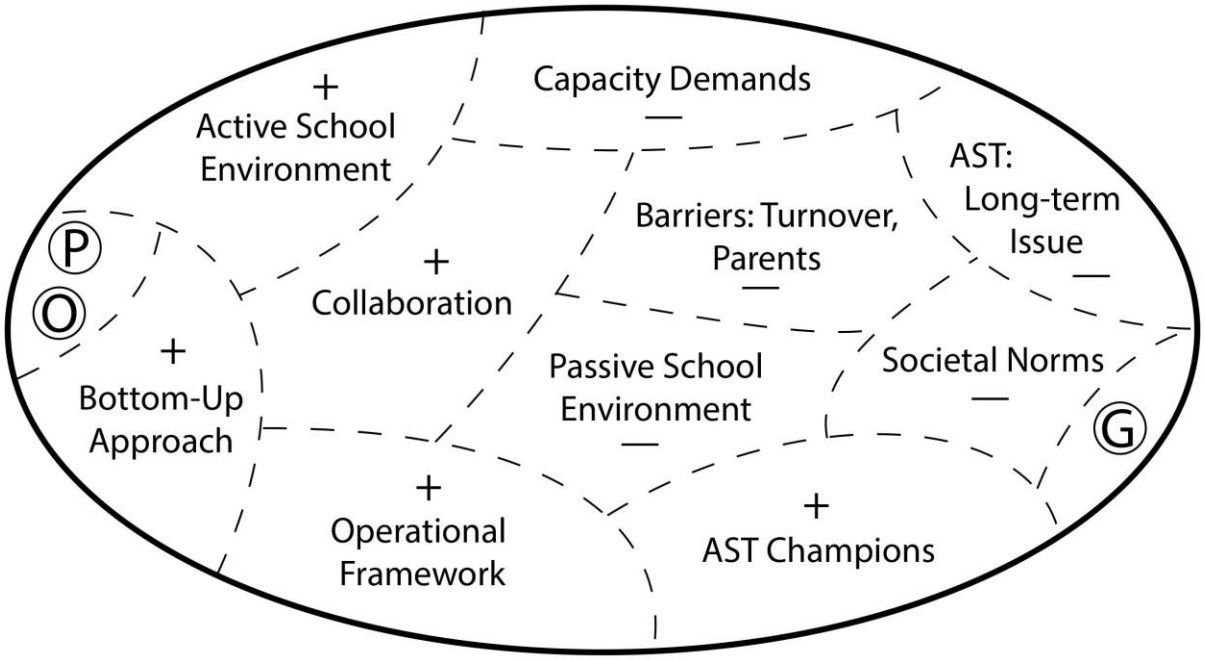
797 **Figure 3. Field Theory Model Adapted to School Travel Planning**



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799 *P = population (STP committee), O = current situation, G = targeted goal (improved functioning and sustainability), and those*
800 *sectors between O and G represent various forces influencing change (Burnes and Cooke, 2013). "+" = facilitating force, "–" =*
801 *constraining force.*

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