EXPLORING PARENTAL PERCEPTIONS OF A WALKING-SCHOOL-BUS INITIATIVE IN NORTHERN ONTARIO

by

Darran James Atrooshi

A thesis submitted to the School of Kinesiology and Health Studies
In conformity with the requirements for
the degree of Master of Science

Queen’s University
Kingston, Ontario, Canada
(February, 2017)

Copyright © Darran James Atrooshi, 2017
Abstract

**Introduction:** Active transportation to school (ATS) may be a way to increase children’s physical activity (PA) levels and achieve health related benefits, however only 24% of Canadian children use active transportation as a mode to travel to and from school (Gray et al., 2014). A walking-school bus (WSB) is a proposed strategy that can afford students a safe, active method of travel to school (Kearns, Collins, & Neuwelt, 2003). Few studies have examined parental perceptions of a WSB. Given that parents are typically the decision makers in regards to methods of school travel, understanding parent perceived barriers and facilitators to using a WSB is warranted.

**Purpose:** The primary purpose of this thesis study was to explore parental perceptions of a WSB in order to inform an effective messaging and promotional strategy. The secondary purpose was to explore barriers and facilitators related to a WSB/ATS and to explore parent ideas about ways for their children to incorporate active travel into their daily routine.

**Methods:** Parents of students (N=16), from three elementary schools located in Northern Ontario were recruited. Semi-structured interviews were conducted, guided by a social marketing approach (Lee & Kotler, 2011). Inductive and deductive analyses were used to identify emerging themes and to explore product, price, promotion and place barriers and/or facilitators related to a WSB. Alternative ATS strategies were compiled.

**Results:** Parents identified the potential for increased levels of PA and positive social interactions as key facilitators of participating in a WSB. Other key facilitators included the opportunity to be supervised while participating in ATS, and promotion of the WSB through electronic platforms such as social media. However, parents expressed concerns regarding the
safety of their children and the reliability of adult supervision of the WSB. Concerns related to extreme weather conditions were also present.

**Discussion:** Findings from this study will be used by the North Bay Parry Sound District Health Unit to guide WSB interventions and to develop a messaging strategy to promote WSB uptake at the participating schools as a way to enhance ATS among students.
Co-Authorship

The manuscript, titled Exploring Parental Perceptions of a Walking School Bus in Northern Ontario, was co-authored by Darran Atrooshi, Brenda Bruner, Lucie Lévesque and Nate Parker. Darran Atrooshi led the conception and design of the study, conducted the literature review, performed data collection through interviews, analyzed the data using thematic analysis and drafted the manuscript. Brenda Bruner and Lucie Lévesque provided guidance in the conception and design of the research, contributed to the data analysis, and aided in critically revising the final manuscript. Nate Parker was involved in the analysis and interpretation of data as a secondary coder for all of the interviews. The manuscript will be submitted for publication to the Canadian Journal of Public Health.
Acknowledgements

It has been an amazing and eventful two years leading up to the completion of my master’s degree. Two years filled with experiences and opportunities I had never dreamed of. It is with great thanks that I have made it to this point because of the support of my supervisors, lab mates, friends and family.

Dr. Bruner, I cannot thank you enough for your support over these past few years. You have a tremendous passion for the field of health promotion and have helped me develop as a researcher and a person. Your encouragement, especially through the tough times has meant a lot to me, thank you for being a great supervisor.

Dr. Lévesque, your guidance and support over the past two years has been nothing short of amazing. I really appreciate how you have helped to shape me as an independent thinker and really appreciate how you have always had my back. Your time management, work ethic, and passion for the field are second to none. Thank you for helping me through this!

A special thanks to Nate Parker for working as a second coder on this project. Nate, you’re an amazing person and I’m very thankful that I had the opportunity to work with you on several projects now. Your patience and encouragement throughout this project has been tremendous. I hope to make it to Houston sometime soon!

To my lab mates, I could not have done it without you. Without the lab chats, coffee walks, and encouraging Facebook chats, I would not be here. Ashley, Anoushka, Colin, Hoda, Hilary, Carla, Elham, Sarah – I am privileged to have been part of such an amazing and supportive group. Thank you all for everything!
Finally, thank you to my friends, family and Brie. Thank you all for helping me through this experience. Even though I’ve been away for a few years, the encouraging phone calls and text messages have helped me more than you all could imagine. A special thanks to my nephews Asher and Jack who constantly remind me why I do what I do. I can’t wait to have more time to play outside and walk you guys to school next year!
Prologue

My intention with this prologue is to help the reader understand my personal connection to northern Ontario and active transportation to school. Growing up in a small town in southern Ontario, I never really considered active transportation as a viable method of travel. I was active in other aspects of my life, but I always saw driving as a primary method of transportation.

I attended Nipissing University in North Bay, Ontario where I spent four years learning about physical and health education and life in northern Ontario. It was not until I moved to Kingston that I started to consider the benefits of active transportation and started to leave my car at home, walking to most destinations instead. When I discovered there was an opportunity to study active transportation to school in North Bay, I was excited at the prospect of learning more about active school travel and how it might be viewed differently in the north.
# Table of Contents

Abstract ......................................................................................................................... ii

Co-Authorship................................................................................................................ iv

Acknowledgements ....................................................................................................... v

Prologue ........................................................................................................................ vii

List of Figures ............................................................................................................... xi

List of Abbreviations .................................................................................................... xii

Chapter 1 Introduction ................................................................................................. 1

1.1 General Introduction ............................................................................................... 1

1.2 Thesis Study ............................................................................................................. 4

1.3 Purpose of the Study ............................................................................................... 5

1.4 Thesis Organization ............................................................................................... 5

1.5 References ............................................................................................................... 6

Chapter 2 Literature Review ......................................................................................... 11

2.1 Benefits of Physical Activity .................................................................................. 11

2.2 Prevalence of Physical Activity ............................................................................. 12

2.3 Prevalence of Active Transportation to School .................................................... 13

2.4 Health Benefits of Active Transportation to School ........................................... 15

2.5 Correlates of Active Transportation to School ................................................... 18

2.5.1 Societal Correlates ............................................................................................ 18

2.5.2 Policy Correlates .............................................................................................. 21

2.5.3 Environmental Correlates ............................................................................... 22

2.5.4 Parent Correlates ............................................................................................. 25

2.5.5 Child Correlates ............................................................................................... 27
2.6 Weather and Active Transportation to School ................................................................. 29
2.7 Active Transportation to School in Rural Environments .................................................. 30
2.8 The Walking School Bus ................................................................................................. 32
2.9 Increasing distance and ATS ......................................................................................... 36
2.10 Limitations of WSB Research and Research Gaps ...................................................... 36
2.11 Summary ........................................................................................................................ 37
2.12 Study Purpose ................................................................................................................ 38
2.13 References ..................................................................................................................... 39

Chapter 3 Study Background and Guiding Framework .......................................................... 53
3.1 Study Background ........................................................................................................... 53
    3.1.1 My Role as a Researcher ......................................................................................... 53
    3.1.2 Positionality as a Researcher ................................................................................ 54
    3.1.3 Study Context ....................................................................................................... 56
    3.1.4 School Travel Planning ......................................................................................... 57
3.2 Guiding Framework: Social Marketing ............................................................................ 58
3.3 The Social Marketing Process ....................................................................................... 60
3.4 References ..................................................................................................................... 63

Chapter 4 Exploring Parental Perceptions of a Walking-School-Bus Initiative in Northern
Ontario .................................................................................................................................... 67
4.1 Abstract ............................................................................................................................ 68
4.2 Methods ............................................................................................................................ 71
    4.2.1 Sampling and Recruitment ...................................................................................... 71
    4.2.2 Participants .............................................................................................................. 73
    4.2.3 Data Collection ....................................................................................................... 74
    4.2.4 Data Analysis ......................................................................................................... 75
List of Figures

Figure 1. Codes, subthemes and themes organized according to the 4 P’s…………………………90
Figure 2. Codes organized into barriers and facilitators for schools A, B and C…………………92
Figure 3. School specific barriers and facilitators to a WSB and recommendations for
   incorporating ATS, with related verbatim……………………………………………….105
List of Abbreviations

MVPA – Moderate to Vigorous Physical Activity
AT – Active Transportation
ATS – Active Transportation to School
PA – Physical Activity
BMI – Body Mass Index
STP – School Travel Planning
WSB – Walking School Bus
SES – Socioeconomic Status
Chapter 1

Introduction

1.1 General Introduction

Physical inactivity among Canadian children is a growing public health concern. Physical inactivity is associated with a plethora of negative health outcomes in children, such as increased risk of chronic diseases including obesity, hypertension, and metabolic syndrome (Ruiz & Ortega, 2009). By contrast, children who are physically active enjoy a variety of health benefits including improved cardiovascular fitness, enhanced cognitive functioning, and lower levels of anxiety and depression (Biddle & Asare, 2011; Larouche, Faulkner, Fortier, & Tremblay, 2014). Despite these known health benefits, a majority of Canadian children are not meeting the recommended guidelines of 60 minutes of accumulated moderate to vigorous physical activity (MVPA) per day (Colley et al., 2011b).

Active transportation to school (ATS) may be a way to increase children’s daily physical activity (PA) levels and achieve health related benefits, however, only 24% of Canadian children use active transportation as a mode to travel to and from school (Gray et al., 2014). Interpersonal level barriers to ATS include parent perceived danger and lack of parental support (Fulton, Shisler, Yore, & Caspersen, 2005). Neighbourhood level barriers to ATS include lack of walkability and high levels of traffic and crime (Carson, Kuhle, Spence, & Veugelers, 2010). School policy such as undesignated car pick-up or
drop-off areas that encourage traffic and congestion around schools can act as a barrier to ATS (Eyler et al., 2008). School start and dismissal times may also act as a barrier to ATS, with later school-start times often interfering with parental work schedules and parents’ availability to walk their children to school (Ahlport, Linnan, Vaughn, Evenson, & Ward, 2008; Eyler et al., 2008). Some environmental barriers to ATS include far distance to school and a lack of appropriate infrastructure (Wong, Faulkner, & Buliung, 2011). Weather may also be a barrier to ATS, although evidence to date is mixed. An analysis from the 2001 US National Household Travel Survey found that children and adolescents are sensitive to seasonal changes in weather, with active transportation patterns higher in June and September and lower in the winter months (Yang, Diez Roux, & Bingham, 2011), while a Canadian study reported that seasonality and short-term weather conditions did not appear to limit ATS (Mitra & Faulkner, 2012). There are also several facilitators to ATS. Individual level facilitators to ATS include positive attitudes towards ATS, and increased independence through participation in ATS (Ahlport et al., 2008). Neighbourhood level facilitators include street connectivity, while school level facilitators include school car-free zone policies and bicycle racks (Morency & Demers, 2010).

The majority of ATS initiatives have shown a small, yet promising effect on increasing children’s ATS habits (Chillón, Evenson, Vaughn, & Ward, 2011). However, most of these ATS interventions have taken place in large urban settings (Chillón et al., 2011; Mammen et al., 2014). It is currently unknown if interventions developed in urban
settings can be applied in smaller and mid-sized, northern communities. When developing ATS interventions, one should consider factors that have been shown to influence children’s ATS in various contexts, such as built-environment features. There are currently mixed opinions about the influence of built environment features on children’s ATS, however, long distances between home and school have been consistently shown to decrease the likelihood that a child will partake in ATS (Wong et al., 2011). While built-environment features are difficult to modify, it is important to consider other influential ATS factors that may be altered, such as parental attitudes towards ATS.

It has been reported that parental influence and attitudes towards ATS are some of the most important factors to explore when designing an effective ATS intervention (Davison, Werder, & Lawson, 2008; DeWeese, Yedidia, Tulloch, & Ohri-Vachaspati, 2013). Parental concerns related to pedestrian safety also play a role in whether or not a child actively travels to school (Kerr et al., 2006). This finding suggests that programs such as safe routes to school or active transportation initiatives can best allocate their resources if they take into account influential factors such as parental perceptions, attitudes and concerns (Stewart, 2011).

A Walking School Bus (WSB) is an ATS initiative often spearheaded by local public health officials to increase children’s ATS and help alleviate parental concerns about child ATS (Davison et al., 2008). A WSB consists of a group of children walking along a set route, supervised by adults, and stopping along the route to pick up other
children (Mackett, Lucas, Paskins, & Turbin, 2003). Walking school buses have been shown to be a promising strategy to increase children’s PA in urban settings (Kong et al., 2009). Although Kong et al. (2009) have investigated the challenges to implementing a WSB, little is known about parent perceived barriers and facilitators related to a WSB in a northern, non-urban environment.

1.2 Thesis Study

This research engaged three elementary schools that are currently involved in School Travel Planning (STP). STP is a comprehensive process designed to engage a variety of stakeholders, including school board representatives, municipal transportation planners, school staff, as well as parents, to work towards an overarching goal of increasing ATS (Green Communities Canada, 2012). The schools in this study are currently in the third phase of the STP process, which involves the development and implementation of action plans to increase ATS. The schools have taken part in some short-term ATS initiatives (e.g. walk and roll to school week), but are now looking to establish a longer-term WSB initiative.

A campaign to persuade parents to allow their children to use the WSB will be launched in fall 2016 in each of the three participating schools. Given evidence showing that correlates of ATS are context-specific (Larouche et al., 2015), interview data from the schools will be used to develop school-specific campaign messages. If messages are tailored to parental preferences, it may help alleviate unique parent concerns (Henne, Tandon, Frank, & Saelens, 2014), and in turn encourage student participation in a WSB.
To our knowledge, no studies have explored parental perceptions of a WSB in a northern Canadian setting.

1.3 Purpose of the Study

The purpose of my study was twofold; the primary purpose of this thesis study was to explore parental perceptions of a WSB in order to inform an effective messaging and promotional strategy. The secondary purpose was to explore barriers and facilitators related to a WSB and ATS, and to explore parent ideas about ways for their children to incorporate active travel into their daily routine.

1.4 Thesis Organization

This thesis was developed in accordance with the requirements of Queen’s University’s School of Kinesiology and Health Studies. Chapter two is a literature review that provides an overview of the benefits and prevalence of PA, prevalence of ATS, health benefits of ATS, correlates of ATS, weather and ATS, ATS in rural environments, the walking school bus and other forms of ATS. The end of chapter two includes a summary and study purpose. Chapter three contains background information and the methodological approach. Chapter four contains a manuscript that embodies the core of this research study, which assessed parental perceptions of a WSB initiative in Northern Ontario. Chapter five expands on the study’s practical implications and highlights findings relevant to the health promotion domain.
1.5 References

http://doi.org/10.1177/1090198106288794


http://doi.org/10.1186/1479-5868-8-10

http://doi.org/10.1016/j.yspm.2011.03.006


http://doi.org/10.1016/j.puhe.2014.05.004


http://doi.org/10.1249/01.mss.0000210208.63565.73


http://doi.org/10.1038/ijosup.2015.25


Mitra, R., & Faulkner, G. (2012). There’s No Such Thing as Bad Weather, Just the Wrong Clothing: Climate, Weather and Active School Transportation in Toronto, Canada, (December), 35–42.

http://doi.org/10.1111/j.1365-2214.2009.01024.x


Chapter 2

Literature Review

2.1 Benefits of Physical Activity

There are various benefits of physical activity (PA) for children and youth (Canadian Society of Exercise Physiology, 2012). Physical activity can improve mental health. For example, PA has been shown to have a small but beneficial effect for reducing anxiety and has also been shown to lower levels of stress and depression in children and youth (Biddle & Asare, 2011). Moderate intensity PA such as walking can improve attention in children (Hillman et al., 2009). There is also a strong positive relationship between PA and cognitive functioning in school-aged children (Sibley & Etnier, 2003). Physical activity also has important implications for reducing the risk of chronic diseases such as cardiovascular disease (Kohl, 2001). In a systematic review, researchers found that children who perform regular PA have lower blood pressure and a healthier blood lipid profile than their inactive counterparts (Andersen, Riddoch, Kriemler, & Hills, 2011). Findings from the European Youth Heart Study suggest that PA is inversely associated with metabolic risk factors such as fasting glucose levels (Brage, 2004). Furthermore, PA is significantly inversely correlated with body fat and Body Mass Index (BMI) in 5 to 10 year old children (Abbott & Davies, 2004).
2.2 Prevalence of Physical Activity

The Canadian Physical Activity Guidelines for Children and Youth recommend that children and youth accumulate at least 60 minutes of moderate- to vigorous-intensity PA on a daily basis (Tremblay et al., 2011). Despite this, only 7% of Canadian children and youth meet these PA guidelines (Colley et al., 2011a). Children often cite lack of time, low confidence and lack of skills as barriers to PA (Humbert et al., 2006). In a systematic review of correlates of children’s PA, the most significant negative correlate of PA was perceived barriers such as low self-efficacy and lack of parent support (Sallis, Prochaska, & Taylor, 2000). Alternatively, intention to be physically active and preference for PA are consistent positive associations with children’s PA (Heitzler, Martin, Duke, & Huhman, 2006). Since PA may track from childhood to adulthood, it is crucial that a preference for PA is developed at an early stage in life (Telama et al., 2005). This is particularly important to reduce the risk of various chronic diseases that are associated with physical inactivity, including cardiovascular disease, hypertension and type 2 diabetes (Biolo et al., 2005; Hurtig-Wennlöf, Ruiz, Harro, & Sjöström, 2007; Lee et al., 2012). Collectively, the literature suggests that few Canadian children and youth meet PA guidelines, and given the importance of PA in reducing chronic disease, special attention should be committed to increasing PA among this population.
2.3 Prevalence of Active Transportation to School

Active transportation to school (ATS) may be an overlooked source of PA for children (Tudor-Locke, Ainsworth, & Popkin, 2001). A cross-sectional analysis from the Avon Longitudinal Study of Parents and Children conducted in Bristol, UK found that children who reside in urban areas and who actively travel to school on a regular basis accumulate 5.98 more minutes of MVPA per day compared to their peers who do not actively travel to school (van Sluijs et al., 2009). Strengths of the study include the use of a large population-based sample, objectively measured physical activity using Actigraph accelerometers, and assessment of various travel modes to school. However, the use of an invalidated measure of parent-reported distance to school did not allow for trip frequency to be determined. Future studies would benefit from using a validated measure of distance to school and incorporation of a longitudinal analysis, which would help to establish stronger evidence in regards to the relationship between ATS and MVPA. Despite the limitations, these findings are consistent with the Canadian Health Measures Survey that used a nationally representative sample of both urban and rural children and youth aged 12 to 17. This survey identified that children and youth who regularly walked (+ 6 minutes) or biked (+9.1 minutes) to school accumulated more minutes of MVPA than their peers who did not engage in ATS. The use of a large nationally representative sample and objectively measured ATS through the use of accelerometers are main strengths of this study, however its cross-sectional design means that more longitudinal
studies are needed to further establish the relationship between ATS and PA (Larouche, Faulkner, et al., 2014).

Although ATS may be a way for children to incorporate PA (Tudor-Locke et al., 2001), rates among Canadian children and youth remain low. Results from Canada’s 2016 Report Card on Physical Activity for Children and Youth showed that only 25% of Canadian youth use active modes of transportation to and from school (ParticipACTION, 2016). This decline in ATS is worrisome because a reduction in the frequency and duration of ATS contributes to less overall PA (Black, Collins, & Snell, 2001; McDonald, 2007).

The decline in ATS rates across Canada is hypothesized to be related to an increase in the number of car-dependent people living in single land-use suburban homes (Buliung, Mitra, & Faulkner, 2009; Pabayo, Gauvin, & Barnett, 2011). The quest for low-density living coupled with increasing car ownership led to suburban sprawl and neighbourhoods favouring loop and cul-de-sac street patterns in the 1960s (Cozens & Hillier, 2008). These designs reduced street connectivity and the availability of connected sidewalks and crosswalks, while also increasing the distance needed to travel to destinations, thereby increasing car dependency. Longer distances and roads with less safety features contributed in turn to decreased active transportation (Frank et al., 2006). This increase in suburbanization has had an impact on ATS, as school trips have likely become embedded within the auto-centric activity patterns of families residing in these suburban areas (Buliung et al., 2009).
Collectively, the literature suggests that ATS may be a viable way to increase children’s PA levels. However, the prevalence of ATS among Canadian children remains low. This may be for a variety of reasons, one such hypothesized reason is the increase in suburban sprawl and resulting car dependency of families living in suburban areas (Buliung et al., 2009). It is important to further investigate why this decline is happening so that appropriate interventions can be designed and implemented to increase ATS rates.

2.4 Health Benefits of Active Transportation to School

Active commuting to school may be a way to increase PA levels and thus achieve health related benefits in children (Gray et al., 2014). A systematic review by Lubans et al., (2011) examined ATS (classified as walking, bicycling, or skateboarding) and health related fitness among children and youth between the ages of 5 and 18 in twelve different countries including Canada and the US. This review revealed an association between active commuting to school and a healthier body composition and higher cardiorespiratory fitness in children. Although this review provided insight related to ATS and body composition through the summary of cross-sectional studies, further intervention studies are needed to investigate the causal nature of such relationships. In particular, inconsistencies in the way ATS was measured makes it difficult to draw definitive conclusions from this research (Lubans, Boreham, Kelly, & Foster, 2011).

A more recent systematic review explored the associations between ATS, PA, body composition and cardiovascular fitness. This newer review included intervention studies including children and youth ages 5 to 17 from seven different countries including
Canada and the US. The quality of evidence was measured through the use of The Project Quality Assessment Tool which rated various factors of the study including study design, validity and reliability of the data, and the control of confounding variables (Thomas, 2003). The review revealed there is moderate quality evidence to support that children who actively commute to school have higher levels of cardiovascular fitness when compared to their non-active counterparts. The inclusion of randomized control trials and quasi-experimental studies in this review are strengths of the review. Limitations include the reliance on self-report data among many studies to classify ATS, as well as a lack of clarification of how many days a child must travel to school to be classified as an active traveler. For example, in a few studies students were classified as active travelers if they walked or biked to school even one day of the week. This may have led to an over-representation of children who are considered active travelers, even if a majority of their school trips were inactive. Future research should seek to standardize the classification of ATS and objectively measure ATS to reduce the potential overestimation of ATS as measured through self-report data (Larouche et al., 2014).

There is some evidence that ATS may also have a positive impact on children’s BMI. Researchers examined data from the Quebec Longitudinal Study of Child Development, which included a provincially representative sample of 1170 children between the ages of 6 and 8 that were followed for a period of 3 years using retrospective parent-reported ATS. These data showed that sustained ATS (defined as walking or bicycling in their current grade and all previous grades) was associated with a favourable
BMI trajectory across early elementary school-aged children. The longitudinal study design is a strength that adds merit to the findings, as it establishes that there is a pattern related to ATS and BMI attenuation in children’s early years. There are also limitations to the study, including the small percentage (14%) of the sample using ATS at age 6. Since children needed to use ATS in their current grade and all grades prior in order to be considered active travelers, this limits the proportion of students that can be classified as such as these students would have been in kindergarten or grade one and amongst the youngest in the sample. The use of retrospective parent-reported ATS data should also be considered when examining the validity of these findings because it may have led to an over-representation of ATS when in fact motorized transportation may have been used. This may be in part due to the retrospective nature in which ATS was collected, it may have been difficult for parents to remember their child’s primary method of transportation in past years (Pabayo, Gauvin, Barnett, Nikiéma, & Séguin, 2010). In a systematic review of 14 ATS interventions that focused primarily on elementary school children in the US, there was some evidence to suggest that ATS attenuated an increase in BMI. There is also some evidence to suggest that children participating in these interventions showed minor improvements in dietary habits which may contribute to BMI improvements (Chillón et al., 2011), although further research is needed to confirm these findings. In addition, the effect sizes of these studies remain rather small (0.07 - .256), with only two studies reporting a large effect size (.861, 1.21). Taken together, these reviews relating ATS to health outcomes highlight the need to address multiple sources of influence upon child
ATS including parents, school, and community (Chillón et al., 2011). Main strengths of the literature include the use of large sample sizes, the inclusion of several countries, and longitudinal study designs. Limitations include a lack of standardized measure of ATS (e.g., walked or biked all the way from home to school at least 4 days of the week) and the reliance on self-report data. While there have been a few randomized control trials to suggest that there are health benefits related to ATS (Larouche, Saunders, et al., 2014), the evidence is currently considered weak, and despite some health benefits reported, rates of ATS remain low. It is important to understand why these rates remain low in order to best develop strategies to increase ATS, and in turn positively impact children’s health.

2.5 Correlates of Active Transportation to School

2.5.1 Societal Correlates

Societal correlates such as social norms around active transportation may play a role in influencing ATS (Robertson-Wilson, Leatherdale, & Wong, 2008). In an exploration of barriers and facilitators related to children’s ATS, health practitioners, traffic engineers, and police officers from three communities in Alberta were interviewed. These practitioners drew upon experiences from their work and life experience in both urban and suburban Alberta. They cited that a culture of convenience, or having a car-centered mentality acted as a main barrier to ATS. Although this study included a diverse sample of individuals who work in various occupations, triangulation
of data from various sample groups including parents, key stakeholders, and children would further add to the strength of these findings (Loitz & Spencer-Cavaliere, 2013).

Similarly, while trying to establish how and why parents choose their method of school transportation, researchers from Toronto, Canada interviewed 37 parents of elementary school children from four different schools located throughout Toronto. They found that parent decision making in regards to school travel often revolves around the quickest and easiest choice, which is often a motorized form of transportation (Faulkner, Richichi, Buliung, Fusco, & Moola, 2010). While this study had a large sample size and sampled various schools, the findings may only be generalizable to large urban centres such as Toronto. It is important to explore what drives travel patterns in other environments. In addition, a quantitative study looked at school travel patterns of children and youth ages 11 to 15 (N = 61,097) by examining the Transportation Tomorrow Survey from Toronto, Canada from 1986 to 2006. Researchers found that ATS has declined in favour of automobile transportation (Buliung et al., 2009). While the large sample size and data from various time periods are strengths of the study, the use of a 24 hour telephone recall to measure ATS in children aged 11 or older is a limitation as it may have not given an accurate representation of actual travel patterns throughout the entire week because the use of a retrospective telephone survey to collect travel data for a single weekday may have led to an overrepresentation of active travelers. Given that it was also a telephone survey, a social desirability bias may have also influenced respondents to report ATS as a method of travel. Notwithstanding the limitations, the increased use of automobiles is
thought to be due to the increasingly auto-centric activity patterns of multi-worker households (Buliung et al., 2009). Multi-worker households may be more susceptible to auto-centric activity due to a greater difficulty coordinating home and work locations, which results in longer commute times compared to single-worker households who often live closer to work. In addition to commute distances, workers with children often opt to drive as it is often more convenient than public transportation (Maat & Timmermans, 2009). Convenience is only one factor that contributes to a lack of ATS. Societal concerns related to safety are also quite prevalent. This was demonstrated in a study conducted in Melbourne, Australia that investigated social correlates of ATS by surveying parents of elementary school children. This study reported that parents had strong concerns related to the potential danger of strangers, specifically fears related to child abduction. This fear often acts as a barrier to their children’s ATS (Timperio et al., 2006). Similarly, drawing on their experiences working on ATS initiatives in urban and suburban communities, police, health promoters and traffic engineers also cited that a common fear of stranger-related danger may act as a barrier to ATS (Loitz & Spencer-Cavaliere, 2013). Collectively, the literature suggests that there are societal challenges that need to be overcome in order to promote ATS. In particular, the culture of convenience and fear of strangers appear to be particularly salient barriers to ATS. While most of this literature is from urban centres, further research is needed to understand if these correlates are similar or different in a northern context.
2.5.2 Policy Correlates

School policies have the potential to positively impact a student’s ATS (Wechsler, Devereaux, Davis, & Collins, 2000). A review of nine different elementary school policies of predominantly urban and suburban schools in various states throughout the United States revealed that having designated car pick-up or drop-off areas that discourage traffic and congestion around schools can encourage ATS. While this study did a good job of engaging various schools that already had ATS initiatives underway, they failed to examine schools without ongoing ATS initiatives and overlooked schools outside of the urban and suburban environment such as those located in rural areas (Eyler et al., 2008).

School policy related to ATS infrastructure may also play a role in encouraging ATS. Twelve focus groups that were conducted with fourth and fifth grade students and their parents in North Carolina revealed that having designated storage areas for bicycles may help to facilitate ATS. While this study included the perspective of both parents and children, the sample was largely urban and does not necessarily shed light on challenges to ATS in other environments (Ahlport et al., 2008).

Liability concerns may also be related to low rates of ATS. While schools are not liable for student safety during the student’s commute to school (Nipissing-Parry Sound Student Transportation Services, 2013), school administrators of elementary and middle schools commonly cite safety concerns related to traffic danger and a lack of infrastructure (a lack of safe places to cross and a lack of sidewalks) as reasons not to
encourage ATS (Price, Pluto, Ogoussan, & Banda, 2011), and these perceived safety concerns may hinder the promotion of policies that encourage ATS. While this study detailed concerns of school principals and administrators in South Carolina, it is not clear if these findings would necessarily be applicable in a Canadian setting. Further, while safety and liability concerns should be considered, examining the perspective of administrators in different settings would add to these findings. The findings of policy-related research suggest that policy may have a significant impact on children’s ATS. However, there seems to be a lack of literature exploring the link between policy and ATS. This link needs to be further examined in several different environments before conclusions can be drawn.

2.5.3 Environmental Correlates

In a systematic review of environmental correlates related to ATS among children and youth in six different countries including Canada and the US, researchers reported that increased distance to school was a consistent barrier to engagement in ATS (Wong et al., 2011). While distance is a consistent barrier across studies, there were mixed results related to other measures such as street connectivity and mixed land use. This may be due to inconsistencies in the way in which environmental correlates of ATS are measured. For example inconsistencies in buffer methods and size make it hard to determine the presence of built environment features in surrounding neighbourhoods several km away from the school such as sidewalks and intersections. Future research should seek to standardize buffer measurement and include both objective built-environment measures,
such as sidewalk presence and connectivity, and subjective measures, such as aesthetics of surrounding areas. Using both measures of the built environment would further add strength to the findings (Wong et al., 2011). Correlates related to ATS were examined among 3,997 Canadian children and youth aged 11 to 15 living within 1.6 km of their school, and which were located in urban areas. Researchers found that engagement in ATS was influenced by multiple factors including neighbourhood safety and sidewalk coverage (Gropp, Pickett, & Janssen, 2012). Although factors influencing ATS were identified, the cross-sectional and quantitative nature of this study did not allow for elaboration related to why these factors may influence ATS. In addition, the inclusion of only children residing in urban areas means that the results have limited generalizability to other contexts.

When examining multi-level correlates associated with ATS among children and youth between the ages of 5 and 18, greater distance to school was consistently related to lower rates of ATS among children (Pont, Ziviani, Wadley, Bennett, & Abbott, 2009). A household telephone survey of parents with children between the ages of 3-18 years, living in low-income urban neighbourhoods in the US, reported that parents who perceived their neighbourhood to be unpleasant were less likely to allow their child to participate in ATS. This study included a comprehensive array of demographic and perception variables, however the reliance on self-reported ATS and the cross-sectional design are weaknesses of the study (DeWeese et al., 2013). Correspondingly, a study conducted in Seattle examined the association of objective and perceived neighbourhood
environmental characteristics in neighbourhoods that varied in walkability and income. The results revealed that parents of younger children (i.e. aged 5 to 11) had stronger safety related concerns compared to parents of older children and youth (i.e. aged 12 to 18) (Kerr et al., 2006). This study did a good job of both objectively measuring the physical environment in addition to exploring parental concerns. However, the cross sectional design and small sample size limits the generalizability of the findings.

Neighbourhood traffic volume also plays a role in influencing children’s ATS. A cross-sectional study from Australia that examined the effects of street connectivity and traffic volume on walking to school among elementary school children reported that students residing in neighbourhoods with high levels of street connectivity and high levels of traffic volume had lower levels of ATS in comparison to students residing in neighbourhoods with high connectivity and low levels of traffic volume (Giles-Corti et al., 2011). Similarly, in an investigation of school administrator’s perceptions of factors that influence children’s ATS, a lack of sidewalks or safe places to cross are often mentioned as barriers (Price et al., 2011). In general, the literature suggests that there are many barriers related to infrastructure, safety, and traffic that must be overcome in order to increase children’s ATS. Common limitations of the literature on environmental correlates to ATS include a lack of standardized measurement of built-environment features, cross-sectional designs and a lack of literature in diverse environments. It remains unknown whether or not northern environments face similar environmental challenges as their urban counterparts. While we know that northern Ontario faces certain
challenges such as a dispersion of dwellings (Statistics Canada, 2011a) and large school catchment areas, further clarification on additional environmental barriers must be identified in order to develop a geographically relevant intervention.

2.5.4 Parent Correlates

Parents are influential in their child’s participation in ATS (Henne et al., 2014). Focus groups with grade 4 and 5 students and their parents from an urban centre in North Carolina revealed that parents commonly cite perceived risk of child abduction as a salient barrier to their child’s participation in ATS (Ahlport et al., 2008). Further, a study conducted in an urban centre in Australia, in which parents of 164 children in grades 1 through 7 were surveyed, reported that a lack of parental support, or having parents who do not value PA acted as barriers to children’s participation in ATS (Ziviani, Scott, & Wadley, 2004). While this study did a good job demonstrating how parents can be largely influential in their children’s travel patterns, the generalizability should be approached with caution, as the study only included parents from one school (Ziviani et al., 2004).

Parent rules may also play a role in children’s ATS. Data analyzed from the Neighborhood Impact on Kids Study, a longitudinal observational cohort study of children aged 6 to 11 and their parents in San Diego County, California, found that parental rules such as having to keep within a certain distance from home was negatively associated with ATS. Strengths of this study include the use of a large sample size from two urban locations. However the reliance on self-report measures of ATS and the use of
a relatively affluent sample means that the generalizability of the findings to other lower
or mixed income areas should be approached with caution (Henne et al., 2014). A study
of ATS in elementary school children in Australia showed that parental perceptions of
few other children living in the neighbourhood, lack of traffic lights or crossings, and
heavy neighbourhood traffic were negatively associated with ATS (Timperio et al.,
2006). This study had a large sample size from nineteen different schools which added to
the merit and generalizability of the findings to other urban areas, however it’s cross
sectional design and modest response rate for elementary school children in the younger
grades, as well as exclusion of rural areas paves the way for future research in this area.

While investigating differences between high and low socio-economic status
(SES) households and ATS rates, researchers reported that those coming from lower SES
households generally have higher rates of ATS (McDonald, 2008). Similarly, in a
systematic review examining correlates of ATS among children and youth, higher
household income and car ownership were consistently associated with lower rates of
ATS (Pont et al., 2009). Given that parents play such a large role in their children’s ATS,
interventions should seek to include parental input (Henne et al., 2014). Work flexibility
and time management may also play a role in ATS. In a study that investigated barriers
and facilitators of ATS in parents and children in grades 5 and 6 who live within one mile
of their children’s school, parents often reported time management concerns. In
particular, parents who had inflexible work schedules cited this inflexibility as a barrier to
their child’s ATS. In comparison, other parents who had flexible work schedules reported
that this was the most important factor that enabled them to allow their children to participate in ATS (Ahlport et al., 2008). Researchers found that parental decisions in relation to school-trip mode were largely influenced by whatever method of travel was the most convenient (Faulkner, Richichi, Buliung, Fusco, & Moola, 2010).

In light of this finding and given that safety concerns are often a barrier to children’s ATS, initiatives should seek to simultaneously target the behavioural cost, or habit setting patterns, of competing transportation choices while also addressing safety concerns (Faulkner et al., 2010). The literature suggests that parents are largely influential in their child’s decision to partake in ATS. Strengths of the literature include large sample sizes, longitudinal study designs and inclusion of a wide variety of age ranges. Limitations include a lack of generalizability and an overrepresentation of studies conducted in urban centres. Future research should seek to incorporate parental input in northern areas, which are currently lacking in appropriate ATS research to guide interventions.

2.5.5 Child Correlates

Gender is a correlate of ATS. In an examination of school travel patterns among children, it was found that boys typically have higher rates of ATS than girls. Although the rates of walking are similar, boys tend to bike to school more than girls (McDonald, 2012). In a review of active travel correlates of children and youth between the ages of 5 and 18 in the United States and Australia, it was discovered that the opportunity for social
interactions and peer support had a positive association with active school travel (Panter, Jones, & van Sluijs, 2008). A child’s age may also influence ATS. A longitudinal study, which used a representative national sample to investigate Canadian children’s ATS over the course of five years, reported that as children aged, the likelihood of participating in ATS increased. This increase peaked at age 10, and was followed by a decrease in ATS as of age 11. This decrease is hypothesized to be due to children graduating from elementary school and moving on to middle school or high schools that are often located further away from their houses, thus decreasing the likelihood of ATS (Pabayo et al., 2011). In terms of race, data from the 2001 US National Household Travel Survey suggests that minority students such as African-American and Latinos use ATS at a much higher rate than white students. However, racial travel variation patterns were removed once income and household correlates are controlled for. This may imply that race in itself is not as important a factor as household income and proximity of a child’s house to their school. In this study it was found that minorities typically lived closer to their school, which would suggest that further attention is needed to promote ATS to children who reside further away from their school (McDonald, 2008). In a study that explored barriers and facilitators to ATS in parents and children living within one mile of their school, older siblings described as aged 10 or older, were commonly cited as a facilitator to ATS. This is in part due to their ability to help keep their younger sibling safe (Ahlport et al., 2008).
Taken together, the current evidence suggests that more attention is needed to promote ATS. While a majority of the literature is generalizable to large urban centres, further research is needed to clarify how ATS can appeal to children residing in northern communities. Leveraging key factors such as sibling involvement by encouraging methods of ATS in which several siblings can participate may help to improve ATS rates (Ahlport et al., 2008). In addition, innovative strategies are needed to appeal to parents and their children who live far away from school in order to incorporate some type of ATS into their routine.

2.6 Weather and Active Transportation to School

Weather may also play a role in influencing active transportation to school. An analysis from the 2001 US National Household Travel Survey found that children and adolescents are sensitive to seasonal changes in weather, with active transportation patterns higher in June and September and lower in the winter months. Researchers found that urban areas in the Northeastern United States had the greatest seasonal variation in ATS participation. While this study had a large sample size that was representative of the US population, it’s reliance on self-report measures of ATS suggests that further objective research is needed to clarify the relationship between weather and ATS (Yang et al., 2011). Some researchers have found that colder temperatures are responsible for a reduction in AT behaviour in urban areas such as Toronto (Saneinejad, Roorda, & Kennedy, 2012). However, in another study conducted in Toronto, Ontario, Canada researchers found that short-term unfavourable weather conditions such as increased
precipitation or lower temperatures had no significant effect on travel behaviours of
elementary school-aged children. The large sample size is a main strength of this study,
however its cross-sectional design and reliance on self-report suggest that further
longitudinal, objective research is needed to clarify this relationship (Mitra & Faulkner,
2012). Likewise, studies in New Zealand looking at physical ecology variables including
temperature, which varied between 4 and 22 degrees Celsius, and precipitation,
dichotomized as raining or not raining, found that weather had no significant influence on
children’s travel behaviours (Oliver et al., 2014). Although there is some research to
suggest that weather may not effect ATS in warmer climates such as New Zealand
(Oliver et al., 2014), or in large urban centres such as Toronto (Mitra & Faulkner, 2012),
the relationship between weather and ATS is not clearly established in the literature.
Further, the research related to weather and ATS is lacking in various environments.
Further research is needed to determine if weather influences ATS, especially in Northern
environments with longer durations of unfavourable conditions (Government of Canada,
2015) and varying snow removal policies that may be different than those in urban-
centres.

2.7 Active Transportation to School in Rural Environments

Statistics Canada defines a population centre as having a population of at least
1,000 people and a density of 400 or more people per square kilometer. This may include
certain areas of Northern Ontario. All areas outside of population centres are defined as
rural (Statistics Canada, 2011c). In a study that investigated correlates of walking and
bicycling to school in the US, researchers analyzed a nationally representative sample of 7433 children ages 9 to 15. They found that children residing in rural areas often have lower ATS rates compared to children residing in population centres (Martin, Lee, & Lowry, 2007). Likewise, 248 parents of fourth graders from seven different rural schools in Texas were surveyed. Researchers reported that children from rural areas face extra barriers to ATS, such as residing outside a reasonable (30 minutes) walking or biking distance to their school when compared to urban children (Lu et al., 2014). Similarly, when exploring barriers and facilitators related to children’s ATS from a health practitioners’ standpoint, health practitioners perceived that distance to school was a particular challenge for children residing in new suburban, and rural areas (Loitz & Spencer-Cavaliere, 2013). While this study involved practitioners, as they are seen as front-line workers that have the potential to help children increase their ATS (Loitz & Spencer-Cavaliere, 2013), future studies should seek to incorporate parental input as they have a large influence on their children’s travel patterns, as highlighted previously.

Rural areas may face certain challenges related to safety. In an exploration of safety features surrounding Canadian schools, it was discovered that schools in rural areas, defined as having a population density of less than 400 people per square kilometer, or having a total population of less than 1000 people, have proportionately less pedestrian-related infrastructure such as sidewalks, speed bumps, bicycle lanes, and other traffic calming measures in comparison to urban schools. Another main difference between rural and urban schools is that rural elementary schools had proportionately less
amounts of vehicle traffic and crime compared to urban schools. However, even with less vehicle traffic rural schools were more likely to be located on high-speed roads (>60km/h) which may negate students from actively travelling to school (O’Loghlen, Pickett, & Janssen, 2011). A longitudinal study tracked ATS among a nationally representative sample of 22,831 Canadian children and youth between the ages of 6 and 11 over the course of five years. Researchers reported that students residing in urban areas are more likely to participate in ATS, when compared to students residing in rural areas (Pabayo et al., 2011). Collectively, the literature suggests that children residing in rural areas face added challenges to ATS such as a lack of pedestrian infrastructure, and increased distance to school when compared with urban children who typically don’t face these particular challenges. However, there is currently a gap in the literature when considering what challenges families in a northern environment may face relate to ATS. In particular, it is known that northern regions of Ontario face harsher winter weather conditions than those in the south (Government of Canada, 2015), and therefore further research is needed to clearly establish unique challenges to ATS in a northern environment. Although one might hypothesize that northern and rural communities face similar challenges, further research is needed to clarify whether this is true and to identify potentially unique challenges and opportunities for ATS in a northern region.

2.8 The Walking School Bus

A walking school bus (WSB) is an initiative that encourages children to use active modes of transportation to travel to school (Mackett et al., 2003). A WSB consists of a
A group of children walking along a set route, supervised by adults, and stopping along the route to pick up other children (Mackett et al., 2003). The WSB first originated in 1998 at a junior school located in St. Albans, England. The original WSB was responsible for reducing vehicle traffic surrounding the school by 30%. The initiative has since grown and become a popular ATS initiative at elementary schools throughout the US, Canada, New Zealand and Australia (Kearns et al., 2003). The WSB has been shown to be a promising strategy to increase children’s PA in urban settings (Davison et al.; 2008; Smith et al. 2015; Kong et al., 2009). For example, a WSB that was initiated using parent volunteers as chaperones at an inner-city school in Seattle, Washington was found to increase children’s ATS by 25% and to yield modest improvements in safety behaviours, such as safe crossing habits. Strengths of this study include the use of a randomized control trial design, with 4 schools running a WSB intervention, and 4 schools as control school with no WSB, as well as the use of validated measures of pedestrian safety. However, the study’s use of an urban, low-income school limits the generalizability of the findings (Mendoza et al., 2012). Similarly, researchers explored the impact of a WSB intervention over the course of two years in three elementary schools in Nebraska. They found that the two intervention schools that had a WSB year-round had ATS levels 27% higher than in the control school with no WSB. Children who participated in the WSB also obtained 25% more PA, and had half the increase in BMI compared with passive commuters (Heelan, Abbey, Donnelly, Mayo, & Welk, 2009). The longitudinal design and collection of data across all the seasons further add to the merit of this study because
it suggests that a WSB may be a viable long-term, year-round intervention and can be used as part of a strategy to help influence healthy weights among children who participate. Correspondingly, in a pilot evaluation of a WSB program in an urban community in Seattle, Washington, it was found that even after one year, schools with a WSB had a higher proportion of students regularly walking to school when compared to schools with no WSB (Mendoza, Levinger, & Johnston, 2009). The results of this study should be approached with caution as this study was conducted at a low-income, ethnically diverse school and the results may not necessarily be applicable to schools with varying income levels or a homogenous student population. The study also relied on self-report data as a measure of WSB participation, which may have led to an over-representation of individuals who reported using active methods of travel (Herrador-Colmenero, Pérez-García, Ruiz, & Chillón, 2014).

One of the proposed benefits of a WSB is enhanced pedestrian safety. A pilot study was conducted in Houston, Texas that examined the impact of a WSB on children’s pedestrian safety behaviours. Researchers discovered that a WSB improved certain aspects of pedestrian safety such as consistently crossing with an adult or crossing safely at a crosswalk where there is greater visibility from traffic (Johnston, Mendoza, Rafton, Gonzalez-Walker, & Levinger, 2015; Mendoza et al., 2012). In addition to increased PA and safety related behaviours, a WSB may be a way to foster social interaction among users. A WSB pilot was also evaluated in an underserved school district in Albuquerque, New Mexico. Researchers measured student (kindergarten to grade six) and parent
satisfaction of a WSB through surveys and focus groups. It was reported that a WSB was a good way to foster positive social interactions amongst parents and students alike (Kong et al., 2009). Similarly, an assessment of the benefits of a WSB was conducted in Christchurch, New Zealand where past and present WSB coordinators were interviewed. Researchers reported that participation in a WSB has several social benefits such as the ability to foster new friendships and to instil a sense of community. Participation in a WSB may also help to encourage children’s independent mobility by encouraging safe pedestrian behaviour and helping to develop familiarity and confidence in the navigation of the area surrounding their home and school (Kingham & Ussher, 2007). In addition to PA and social benefits, a WSB may also have environmental benefits by reducing CO₂ emissions, although this evidence is very preliminary (O’Fallon, 2015). A review of WSB literature revealed that there are certain factors that act as barriers to participation such as a lack of time, safety concerns, or difficulty recruiting volunteers to lead the WSB. There are also facilitators that may encourage WSB participation, such as the opportunity for social interaction (Smith et al., 2015).

Most WSB studies have been conducted in urban areas with a primary focus on how they may increase children’s ATS (Smith et al., 2015). It unknown if a WSB is a viable strategy to increase ATS in other contexts, such as northern regions of Ontario. While some studies have examined the social benefits of a WSB (Kingham & Ussher, 2005; Kong et al., 2009), these have also been conducted in urban areas. There is also a gap in the literature regarding parental perceptions of a WSB. In particular, it is unknown
if parents in northern Ontario support such an initiative and what types of benefits or challenges such an initiative might encounter if implemented in schools located in northern Ontario.

2.9 Influence of Distance & ATS

Some students live too far from their school to participate in a WSB. For these children, innovative, context-specific strategies are needed to incorporate some type of active travel into daily commute to school (Larouche et al., 2015). Active alternatives to walking all the way to school include designated drop off spots within walking distance to home or school, or driving part way and walking the rest of the way to school. It is noted that ATS initiatives should take into account contextual factors when designing and implementing an intervention (Larouche, Barnes, & Tremblay, 2013). While there are various factors to consider when promoting ATS, incorporating both school and community resources may be an effective way to build capacity and engage key stakeholders (Buliung, Faulkner, Beesley, & Kennedy, 2011).

2.10 Limitations of WSB Research and Research Gaps

Overall, research related to a WSB in a northern environment is limited. Studies have shown that a WSB may be a way to increase children’s ATS and act as an opportunity to foster social interactions in larger urban centres (Heelan et al., 2005; Kong et al., 2009). In addition, there is a paucity of research related to effective strategies to promote uptake of a WSB. Although previous studies have touched on promotion, there
is a need to determine how to effectively market a WSB to parents in order to increase participation (Smith et al., 2015). There is also limited research on ways to incorporate active travel if children further than the typical distance to walk to school (i.e. >1.6km) (Larouche et al., 2013). Further research is needed in this area, particularly in the development of context specific activities and promotional methods.

Common limitations in the literature include relying on the use of self-report for measuring ATS, as well as the limited generalizability of the findings to northern regions. Given that a majority of studies were conducted in larger urban centres, and countries with warmer climates than Canada such as Australia and New Zealand (Smith et al., 2015), and that ATS initiatives may be context specific (Larouche et al., 2015), there is a considerable gap in understanding how a WSB can be developed and promoted in a northern environment.

2.11 Summary

Canadian children are not meeting the daily recommended guidelines of 60 minutes of MVPA per day (ParticipACTION, 2016), and active transportation to school may be a way to increase children’s PA levels and achieve health related benefits (Gray et al., 2014). Parents are influential in their decision to allow their child to partake in ATS (Henne et al., 2014). While we know that factors such as fear of child abduction (Ahlport et al., 2008) and a lack of convenience (Faulkner et al., 2010) discourage parents from allowing their children to partake in ATS in urban centres, it is unknown what influences parent decision making in other contexts, such as communities in northern Canada.
Incorporating parental input in the development and implementation of a WSB may help to create a more long-term, sustainable ATS initiative by tailoring the intervention to specific needs of parents, and creating a sense of ownership that may help instil a desire to maintain the initiative over the long term.

2.12 Study Purpose

The primary purpose of this thesis study was to explore parental perceptions of a WSB in order to inform an effective messaging and promotional strategy. The secondary purpose was to explore barriers and facilitators related to a WSB and ATS and to explore parent ideas about ways for their children to incorporate active travel into their daily routine.
2.13 References


http://doi.org/10.1111/j.1746-1561.2011.00647.x


http://doi.org/10.1186/1479-5868-8-10


Neighborhood perceptions and active school commuting in low-income cities.


http://doi.org/10.1016/j.amepre.2013.04.023


http://doi.org/10.1093/her/cym061


http://doi.org/10.1186/1479-5868-7-62


Activity for Children and Youth, 11(Supp 1), 26–32.


http://doi.org/10.1123/pes.2013-0120


http://doi.org/10.1016/j.neuroscience.2009.01.057


http://doi.org/10.1177/1049732305286051


http://doi.org/10.1097/HJR.0b013e32808c67e3


Loitz, C. C., & Spencer-Cavaliere, N. (2013). Exploring the Barriers and Facilitators to
Children’s Active Transportation to and From School From the Perspectives of Practitioners. *Journal of Physical Activity and Health*, (10), 1128–1135.


Mitra, R., & Faulkner, G. (2012). There’s No Such Thing as Bad Weather, Just the Wrong Clothing: Climate, Weather and Active School Transportation in Toronto, Canada, (December), 35–42.


ParticipACTION. (2016). Are Canadian Kids Too Tired To Move?


http://doi.org/10.1016/j.trd.2011.09.005


Chapter 3

Study Background and Guiding Framework

3.1 Study Background

This thesis reports on an ancillary study to a CIHR-funded research project (GIR-134235) led by Dr. Brenda Bruner from the Schulich School of Education at Nipissing University. Dr. Bruner’s research seeks to assess the implementation and impact of a School Travel Planning (STP) intervention on elementary schools in the North Bay Parry Sound District within the context of a smaller, northern community. Research areas addressed in Dr. Bruner’s study include perceived individual and family level barriers and facilitators to ATS, the effectiveness of the STP initiative for increasing active travel behaviours between home and school and for contributing to overall PA, and the influence of ATS initiatives on mental health outcomes in students.

3.1.1 My Role as a Researcher

My background played a key role in the success of this study. I spent a considerable amount of time in northern Ontario, and received my undergraduate degree from Nipissing University in North Bay. I also became familiar with the school environment in northern Ontario, as I spent my summers of graduate school in North Bay assisting with physical literacy testing at various schools throughout the city. While spending time in North Bay, I developed a relationship with the local health unit by assisting in various active travel initiatives and evaluation activities such as; traffic...
counts, hands-up surveys, and bike rodeos. These activities allowed me to become familiar with various teachers, administrators, and parents at the research sites and assisted in the relationship-building component of the research. The health unit, which has a research partnership with Nipissing University, was also able to develop strong rapport with the administrators of the three schools listed in this study. These close ties with school administrators, Nipissing University, and the North Bay-Parry Sound District Health Unit helped propel the research forward in a positive manner.

3.1.2 Positionality as a Researcher

As a researcher, I reflected on my background in physical and health education and my time spent in northern Ontario and how it might have impacted my interpretation and interactions with my participants. As someone who has spent considerable time in North Bay, I could relate on a personal level to most participants. I can recall from my time in North Bay that I used my car as my primary method of transportation. I can also recall the vast amount of snow and cold weather North Bay was subjected to in the winter times.

Prior to the interview process, I was able to meet several parents from Parry Sound at a recruitment night. I felt that meeting these parents and spending some time in Parry Sound was essential to my success in this study. It allowed me to understand a little more about the landscape and demographics of the city as well as helped me to visualize challenges parents and children might face to ATS. In addition to background
information and lived experience, it is important to reflect how my age and gender may have influenced how I approached my research. As a young male without children, I may have been viewed as a bit of an outsider in comparison to parents who had children attending school. I approached all interviews with caution and with an open mind. As I did not have children, I was open to listening to everything parents had to say. However, my position as a young male may have affected how much parents elaborated on their responses to my questions and how comfortable they were talking to me.

It is also important to consider how my position as a graduate student may have influenced the research. As interviews were conducted, I was looking for rich data so I probed when topics arose that I felt were important, which may have led to an overrepresentation of certain topics such as weather-related challenges. It is also possible that since this was a research study, parents who participated may have been subject to a social desirability bias, which would have limited the amount of information they were willing to share on sensitive issues such as safety (Holbrook, Green, & Krosnick, 2003).

Despite certain challenges discussed above, I feel like I was able to develop rapport in my interviews, which is an essential component of the interview process (Dicicco-Bloom & Crabtree, 2006). I am conscious of the fact that my positionality is intertwined with the data, and that the codes and themes that emerge were influenced by both my educational background and my experience living in North Bay.

Throughout the research process, reflexivity was practiced by keeping a reflexive journal in which introspections were recorded and subsequently reviewed (Guba, 1981).
Each major methodological decision and rationale behind these decisions was documented. For example, coding decisions, such as the decision assign certain sections of the verbatim multiple codes and the decision to cap the sample size were noted in the journal entries. Reflexivity was also practiced during analysis phase by referencing my reflexive journal. This helped me to consciously consider the context of how my introspections might influence the interpretation and analysis of the data (Dowling, 2006).

3.1.3 Study Context

Northern Ontario, as defined by the Northern Ontario Heritage Fund Corporation, includes all areas of Ontario that are located within or north of the Nipissing and Parry Sound districts (Northern Ontario Heritage Fund Corporation, 2011). North Bay is a mid-sized northern community with a population of approximately 54,000 (Statistics Canada, 2011a). Parry Sound is a smaller community with a population of approximately 6,200 (Statistics Canada, 2011b). Given that North Bay and Parry Sound are both included in this study, they appropriately fit the northern Ontario definition (See Appendix A – Map).

Students living in Northern Ontario may face unique challenges to ATS. This part of the province is characterized by a larger dispersion of dwellings (Statistics Canada, 2011a), school bus eligibility distances that are shorter than those in southern Ontario (Near North District School Board, 2009; Toronto District School Board, 2014), a lack of pedestrian infrastructure, and harsher winter weather conditions than those in the south (Government of Canada, 2015). These factors can present unique ATS challenges,
influencing travel distance, method of travel, and time spent commuting, which might require novel approaches to incorporate active travel into the daily routines of children.

### 3.1.4 School Travel Planning

The present study engaged schools that were involved in the School Travel Planning (STP) process as part of Dr. Bruner’s research. STP is a process in which a variety of key stakeholders work together to achieve an overarching goal of increasing ATS (Green Communities Canada, 2012). The first phase of the STP process is the set-up phase, which involves the engagement of STP facilitators, municipal stakeholders, STP committees and the selection of school sites. The second phase includes a baseline data collection that might include school profiling, classroom and family surveys, walkabouts, traffic observations, and summarizing findings. The third phase of the STP process is the development and implementation of an action plan that might involve an educational component, infrastructure improvements, or the development of active travel strategies. The fourth and final phase of STP involves evaluation of the initiative. This can include follow-up surveys, school travel plan updates or the development of new ATS policies (Green Communities Canada, 2012).

The elementary schools (n=3) in the present study are in the third phase of the STP process. The schools have taken part in some short-term ATS initiatives (e.g. walk and roll to school week), and are now looking to establish a longer-term WSB initiative. The WSB has been shown to be a promising strategy to increase children’s PA in urban settings (Kong et al., 2009). Given that parent perceptions play a large role in their
children’s neighbourhood walking habits (Timperio et al., 2006), parents must be supportive of ATS initiatives. Dr. Bruner and I worked closely with the health unit throughout this study to ensure that the findings would be useful to them. The health unit will be using the findings to implement a social marketing campaign that is tailored to the specific ATS/WSB barriers and facilitators experienced by this parent population. This campaign to encourage parents to enroll their children in the WSB is being launched in fall 2016 in each of the three schools.

3.2 Guiding Framework: Social Marketing

Designing programs or communication campaigns to affect behaviour requires first being able to understand what factors influence a person’s decision to perform a specific behaviour (Andreasen, 1995). A social marketing approach is useful in this regard as it collects and uses the perceptions of a target audience to create behavioural messages that are salient to the intended population (Bryant & Grier, 2005). This approach employs commercial marketing concepts and strategies to encourage ‘consumer’ behaviour change, not for financial profit, but rather for benefit the individual and society as a whole (Kotler, 2011).

Social marketing draws on the domains of persuasion psychology, behavioural theories, and marketing science and includes tested conceptual constructs to increase message persuasion effects. One of the essential components of the social marketing approach is the marketing mix, which is useful for understanding what a service/product/intervention can offer and how to plan the execution of a
service/product/intervention in a way that addresses perceived barriers (Borden, 1964).

The 4-Ps are often used to describe the marketing mix (Lee & Kotler, 2011):

1. **Product** – refers to major product elements and includes: a) the benefits of performing the desired behaviour (i.e. participation in a WSB), b) any goods or services to be promoted, and c) any additional product elements included to assist the target audience in performing the desired behaviour.

2. **Price** – refers to actual or perceived cost of the desired behaviour. In this case, price is related to the barriers that must be overcome in order to engage in the WSB.

3. **Place** – is where and when the target market will perform the desired behaviour. In regards to a WSB, place refers to the various neighbourhoods, routes and roads in which the initiative will be conducted.

4. **Promotion** – is associated with disseminating the appropriate message to the intended audience at a time when they are likely to be receptive. In this case, promotion will be letting our target audience (i.e., parents) know the associated benefits of a WSB while circumventing potential barriers at the time they are making transport decisions for their child’s school commute.

The marketing mix of the social marketing approach is a relevant framework to inform the development of effective messages to parents about the WSB because it is one of the essential eight components of social marketing as it applies to health intervention planning and promotion (Craig Lefebvre & Flora, 1988). Social marketing, and
leveraging the 4 Ps in particular, has been shown to be an effective framework for promoting health behaviour change (Bryant & Grier, 2005).

One social marketing campaign that successfully encouraged youth to be physically active was the VERB campaign (Wong, Greenwell, Gates, & Berkowitz, 2008). The VERB campaign was successful in raising awareness regarding the benefits of PA as well as encouraging youth to be physically active (Berkowitz et al., 2008). Another notable social marketing campaign is the 5-4-3-2-1 Go! campaign to address childhood obesity. In addition to raising awareness about physical activity and healthy eating, this social marketing effort was successful at enhancing water consumption among parents (Evans, Necheles, Longjohn, & Christoffel, 2007). Given the success of previous social marketing initiatives at influencing health behaviours the social marketing approach and the 4 P’s of the marketing mix constitute a relevant guiding framework for the present study.

3.3 The Social Marketing Process

The use of a social marketing approach (Walsh, Rudd, Moeykens, & Moloney, 1993) in public health typically entails eight steps. The first two steps are identifying an organizational goal and ensuring there is an emphasis on voluntary exchanges between providers and consumers (Craig, Lefebvre & Flora, 1988). These first steps were conducted by the North Bay Parry Sound District Health Unit whereby an organizational goal was established over a period of time informed by School Travel Planning (STP) surveys, short-term ATS initiatives, and gathering parental input. The STP committee and
health unit had decided that a long-term sustainable ATS intervention was needed. This led to the decision that a WSB would be piloted at two schools in North Bay and one school in Parry Sound. Since participation in the WSB is free and potential participants have a choice to participate or not, participation in a WSB is a voluntary exchange (Kong et al., 2009).

The third step of the social marketing process is audience segmentation. This process involves dividing individuals into meaningful subgroups that share wants, needs, demographic or geographic characteristics. These similarities in subgroups suggest that the target populations may respond similarly to public health interventions (Bryant & Grier, 2005; Craig Lefebvre & Flora, 1988). There are two types of schools involved in this study; neighbourhood schools that are located in residential areas and may have a lot of students residing within close proximity to the school, and feeder schools that attract students from various areas throughout a city. For the purposes of this study, schools were segmented by geographical context (i.e. neighbourhood vs. feeder school).

The fourth step of the social marketing process is the conduction of formative research. Formative research is used to gain a deeper understanding of the target audience’s needs, values and everyday life. It involves identifying factors that must be addressed in order for behaviour change to happen (Bryant & Grier, 2005). Formative research can be conducted through a variety of methods including focus groups, interviews, surveys, pilot studies etc. (Craig Lefebvre & Flora, 1988). The health unit distributed surveys (Appendix B) as part of the research process to gauge interest in WSB
participation. These surveys also acted as a recruitment method for the interviews used in the current study. Qualitative methods were appropriate for this study because the use of interviews allowed for a rich description of phenomena to be explored (Sofaer, 1999). In particular, qualitative methods were useful in helping to identify hot button topics of our audiences, and helped to develop key messages to address these topics (Sofaer, 1999).

Given that the guiding framework was the marketing mix (Borden, 1964), and part of the purpose was to inform the health unit’s objective to develop an effective WSB messaging and promotional strategy, qualitative methods were particularly relevant (Sofaer, 1999). In addition, the need for a contextual understanding of schools and the challenges they face in regards to ATS made qualitative methods particularly appealing over a quantitative approach (Bryman, 2006).

The remaining steps of the social marketing process include an analysis of distribution channels, the use of the marketing mix in the development and implementation of the intervention and continuous tracking and evaluation (Craig Lefebvre & Flora, 1988). These last steps were conducted by the health unit, and were aided by the dissemination of knowledge obtained in the formative research process. Given that the purpose of the thesis was to inform the health unit in the development of their social marketing campaign, the actual implementation and testing of messages is beyond the scope of this thesis.
3.4 References


http://doi.org/10.1016/j.amepre.2008.03.008


http://doi.org/10.1177/109019818801500305


http://doi.org/10.1016/j.jneb.2006.08.024


http://doi.org/10.1007/BF02766777


Lee, N., & Kotler, P. (2011). *Social Marketing - Influencing Behaviors for Good*


http://doi.org/10.1377/hlthaff.12.2.104

Chapter 4

Exploring Parental Perceptions of a Walking-School-Bus Initiative in Northern Ontario

Authors: Atrooshi, D. J., Parker, N., Bruner, B. G., Lévesque, L. (In preparation)
4.1 Abstract

**Background:** Active transportation to school (ATS) may be a way to increase youth’s physical activity levels and achieve health related benefits (Gray et al., 2014). A walking-school-bus (WSB) is a proposed strategy that affords students a safe, active method of travel to school (Kearns, Collins, & Neuwelt, 2003). Little research has examined parental perceptions of a WSB. Given that parents are often the decision makers in regards to method of school travel, further research is warranted.

**Methods:** Parents of students (*N*=16), from 3 elementary schools were recruited. Semi-structured interviews were conducted, guided by a social marketing approach (Lee & Kotler, 2011). Interviews explored perceptions about barriers and facilitators related to a WSB initiative in Northern Ontario and ways to incorporate ATS into children’s daily routines. Inductive and deductive analysis was used to identify emerging themes.

**Results:** Parents identified the potential for increased levels of PA and positive social interactions as key facilitators to participating in a WSB. However, parents expressed concerns regarding the safety of their children and the reliability of adult supervision of the WSB. Ideas related to incorporating ATS focused on safety and adult supervision.

**Conclusion:** The information gained through this study will be used by the North Bay Parry Sound District Health Unit to develop a messaging strategy in relation to a WSB and active travel alternatives.
4.2 Introduction

Physical inactivity in Canadian children is a growing public health concern. Among children and youth, physical inactivity is responsible for a plethora of negative health outcomes such as increased risk of chronic diseases including obesity, hypertension, and metabolic syndrome (Ruiz & Ortega, 2009). Children who are physically active enjoy a variety of health benefits including improved cardiovascular fitness, enhanced cognitive functioning, and lower levels of anxiety and depression (Biddle & Asare, 2011; Larouche et al., 2014). Despite these known health benefits, a majority of Canadian children are not meeting the recommended guidelines of 60 minutes of moderate to vigorous physical activity (MVPA) per day (Colley et al., 2011b).

Active transportation to school (ATS) may be a way to increase children’s physical activity (PA) levels and achieve health related benefits, however, only 24% of Canadian children use active transportation as a mode of travel to and from school (Gray et al., 2014). A variety of individual, neighbourhood, environmental and policy barriers and facilitators to ATS have been identified. For example, individual level barriers include perceived safety and lack of parental support (Fulton et al., 2005), while individual facilitators to ATS include the opportunity to walk with friends or other children in the neighbourhood (Ahlport et al., 2008). Neighbourhood level barriers to ATS include a lack of walkability, increased levels traffic and crime, and a lack neighbourhood safety (Carson et al., 2010), while neighbourhood facilitators include safe neighbourhoods and sidewalk coverage (Gropp et al., 2012). Environmental and policy barriers include pollution and automobile congestion as well as lack of ATS policy.
guiding consistent operation of a WSB (Smith et al., 2015), facilitators include good street connectivity, school car-free zones and school bicycle racks (Morency & Demers, 2010).

While the built environment and distance certainly play a large role in a child’s decision to partake in ATS, parental influence and attitudes towards ATS are perhaps some of the most important factors to explore when designing an effective ATS intervention (Davison et al., 2008). Parents commonly rate perceived risk of child abduction as a salient barrier to their child’s participation in ATS (Ahlport et al., 2008). In addition, a study conducted in an urban centre in Australia, reported that a lack of parental support, or having parents who do not value PA might also act as a barrier to children’s participation in ATS (Davison et al., 2008). This suggests that parental input is needed when developing and implementing ATS initiatives.

A Walking School Bus (WSB) is an initiative often spearheaded by public health officials to increase children’s ATS and help alleviate parental concerns (Davison et al., 2008). A WSB consists of a group of children walking along a set route, supervised by adults, and stopping along the route to pick up other children (Mackett et al., 2003). A WSB has been shown to be a viable way to increase children’s frequency of ATS, and overall PA (Mendoza et al., 2012; Smith et al., 2015) however, little is known about parental perceptions related to a WSB.

The primary purpose of this thesis study was to explore parental perceptions of a WSB in order to inform an effective messaging and WSB promotional strategy. The
secondary purpose was to explore barriers and facilitators related to a WSB and ATS and to explore parent ideas about ways for their children to incorporate active travel into their daily school commute.

4.2 Methods

Contextualized in Northern Ontario, this study was conducted in collaboration with the North Bay Parry Sound District Health Unit in two different communities. North Bay is a mid-sized community with a population of approximately 54,000 (Statistics Canada, 2011a). Parry Sound is a smaller community with a population of approximately 6,200 (Statistics Canada, 2011b). This study was guided by a Social marketing framework (Lee & Kotler, 2011). Social marketing aims to understand the perceptions of a target audience in order to develop a campaign for changing said audience’s behaviour, for the benefit of individuals and society as a whole (Kotler, 2011). Using a Social marketing framework helped us to understand barriers and facilitators related to a WSB initiative. Data collection was guided by the 4 Ps (product, price, place and promotion) of the “marketing mix” (Borden, 1964) to develop a relevant interview guide encompassing integral aspects of a marketing strategy (Grier & Bryant, 2005).

4.2.1 Sampling and Recruitment

Parents of children attending each of three schools were invited to participate in the study. At recruitment time, all three schools had undertaken School Travel Planning (STP), a process in which a variety of key stakeholders work together to achieve a
common goal of increasing ATS (Green Communities Canada, 2012). The schools had conducted some STP activities and were looking to implement long-term, sustainable initiatives.

School A is a French immersion school located in an older (circa 1970) downtown neighbourhood in North Bay, Ontario. Due to its educational programming, it draws children from the immediate surrounding neighbourhoods as well as from various other areas of North Bay. The surrounding streets have adequate sidewalk coverage (i.e. most streets in the area have at least one sidewalk), and a grid-like road pattern. This school has approximately 500 students in junior kindergarten (JK) through to grade 6. Based on recent STP survey data, 89% of students are eligible for bus transportation (as they live >1.6km away from their school) and 4% of students at the school use active modes of transportation to travel to school. The students in this school are drawn from a large catchment area, and many students are bussed.

School B is a neighbourhood school located in a predominately suburban area of North Bay, Ontario. This school is surrounded by various new housing subdivisions and lacks a pedestrian infrastructure. The surrounding streets have a limited number of sidewalks and a large number of cul-de-sacs. It is also a JK to grade 6 school and has a population of approximately 200 students. According to a recent STP survey, 50% of students are eligible for bus transportation and approximately 26% of students at this school use active modes of transportation to travel to and from school.
School C is a neighbourhood school located in a predominately residential area of Parry Sound, Ontario. This school is mainly surrounded by residential dwellings and has low levels of mixed land use. This school has a population of approximately 500 students in JK to grade 6. According to STP data from 2015, 42% of students at this school are eligible for bus transportation and approximately 46% of students at this school use active modes of transportation to travel to and from school.

There are two notable difference between school A and schools’ B and C; school A has a fair amount of pedestrian related infrastructure surrounding the school whereas schools’ B and C, being located in primarily residential areas, lacks pedestrian infrastructure. School A also draws students from a larger catchment area due to the nature of their educational programming. This difference results in more children being bussed in from various parts of North Bay and surrounding areas.

4.2.2 Participants

Purposive sampling was used to recruit parents who are the decision maker about how their child travels to school and who has a potential interest in allowing their child to participate in a WSB or an alternative travel strategy. Participants were 16 parents (15 women) who have children in JK to grade 6 at one of three different elementary schools in Northern Ontario. Parents from school A had children in a variety of grades (5 in junior or senior kindergarten, 1 in grade one, 2 in grade three, 1 in grade five and 1 in grade 6), as did parents from school B (2 in senior kindergarten, 1 in grade one, 1 in grade two), and school C (1 in junior kindergarten, 3 in grade one, 2 in grade two, and 1
in grade three. Parents interviewed for this study included seven parents from school A (5 bus eligible, 2 bus ineligible four parents from school B (1 bus eligible, 3 bus ineligible), and five parents from school C (5 bus ineligible). Ten of the parents had children who were not eligible for bus transportation because of their close proximity to the school (i.e., living within 1.6 km from the school); six parents had children that were eligible for bus service (Near North District School Board, 2009). Given that the STP committees and the North Bay-Parry Sound District Health Unit are hoping to propose alternative strategies for bussed students (e.g., locating bus stops further from student homes, dropping students at a walking distance from school), it was relevant to also interview parents of children who are bussed or driven to school.

Participants were recruited through two parent information nights (one in Parry Sound and one in North Bay; see Appendix C), and a paper survey (Appendix B), which was sent out through the schools by the North Bay-Parry Sound District Health Unit to each student attending the three elementary schools described above. Parents provided active consent after receiving the letter of information (Appendix D) as cleared by Queen’s General Research Ethics Board (Appendix E).

4.2.3 Data Collection

Semi-structured interviews were conducted, guided by a social marketing approach and lasting between 11 and 45 minutes, with an average of 15 minutes, were conducted from January 2016 – February 2016, via telephone (Barriball & While, 1994; Lee & Kotler, 2011). In order to explore parental perceptions of a WSB, interview guide
questions (Appendix F) were based on the 4P’s (i.e. product, price, place, promotion) of the marketing mix (Borden, 1964). For example, parents were asked “What do you think about the potential for a WSB at your child’s school?” (i.e., product), “What might make some parents hesitant to allow their child to participate in a WSB?” (i.e., “price”), “Are there certain routes or roads that are appealing for a WSB?” (i.e., “place”), and “What would be some of the best ways to inform parents about the WSB?” (i.e., “promotion”). In addition, participants were given the opportunity to voice any additional concerns they had related to a WSB. The interviews were conducted until it appeared that saturation was reached, as monitored through the use of field notes detailing recurring ideas (Guest, 2006).

4.2.4 Data Analysis

Each interview was audio recorded and transcribed verbatim (Ritchie & Lewis, 2013). All qualitative data were managed using NVivo 11 (QSR International, 2015). All interviews were completed prior to the start of data analysis. An inductive analysis approach was first used, followed by a deductive analysis approach. Interviews were initially grouped and analyzed by school (Baxter & Jack, 2008). School A interviews yielded seven transcripts, School B interviews yielded five transcripts, and School C interviews yielded four. The first step of the inductive analysis procedure was familiarization with the data (Braun & Clarke, 2006). All transcripts were read by the lead researcher, and a subset of three transcripts per school were read by another member of the research team (D. R. Thomas, 2006). Initial notes about recurring topics were taken.
by each coder as a way to familiarize himself with the interviews. The notes were then reviewed and discussed by both coders who agreed that there were few differences between schools. The second stage of inductive analysis was the generation of an initial code list (Braun & Clarke, 2006) by each coder. Each coder generated a list of potential codes (e.g., sidewalks, traffic) that they felt accurately reflected common occurrences within the transcripts. The coders then met to review their notes and codes and to arrive at a consensus on the initial code list (e.g., walking, liability, bicycling) to use when reviewing the transcripts. Transcripts were then independently read by each coder, line-by-line and a code was assigned to each segment of the verbatim (Fereday & Muir-Cochrane, 2006). In some instances, segments were assigned more than one code. The third stage of analysis began after all of the transcripts had been coded. Recurring patterns were used to generate a list of subthemes. Each coder generated a list of potential subthemes and placed the appropriate codes into these subthemes (e.g., safety, physical activity & health). Next, the coders came together to review the subthemes until consensus was reached about which subthemes could be combined to form higher order themes (e.g. benefits of a WSB, logistics). Themes were then reviewed and checked against the data set for each school to make sure that the themes worked in relation to the coded extracts (Braun & Clarke, 2006).

Next, a deductive analysis was conducted (Fereday & Muir-Cochrane, 2006) to better organize the data into our guiding framework (Borden, 1964) so as to facilitate message development by the health unit. During the analysis of the transcripts from each
of the three schools, it was evident that there were only minor differences between the schools, such as school A parent concerns about the inconvenience related to using a WSB. Thus, at this point, the deductive analysis was pursued by grouping the three schools together. This analysis involved placing the appropriate themes and subthemes identified in the inductive analysis into the marketing mix framework (i.e., product, price, place, promotion; Borden, 1964). Consensus was reached between the two coders in regards to which themes and subthemes fit under each “P”. Figure 1 illustrates how the verbatim were organized into codes, subthemes, and themes and organized according to the 4 P’s.
Figure 1. Codes, subthemes and themes organized according to the 4 P’s
Given that the secondary purpose of the study was to identify relevant barriers and facilitators to a WSB and ATS, a second deductive analysis was conducted using this framing. As each coder was already familiar with the data, and had coded each transcript, the decision was made to assign relevant codes into barrier and facilitator categories rather than returning to the verbatim. The deductive analysis consisted of placing codes from each school group of transcripts into relevant WSB and ATS barrier and facilitator categories. For this deductive analysis, the three schools were kept separate in order to provide the health unit with school specific information to guide WSB implementation (Baxter & Jack, 2008). Figure 2 illustrates how the codes from each school were organized into barriers and facilitators.

For analysis purposes, a barrier was defined as anything that prevents or hinders participation in ATS. A facilitator is defined as anything that makes it easier to participate in ATS. For example, for a question related to “product”, a parent mentioned that having someone else walk their children to school in a supervised manner through a WSB would make it easier for their child to participate in ATS. This was highlighted as a facilitator to ATS. When reviewing questions related to “price” parents mentioned that the potential lack of reliability of a WSB would prevent them from allowing their child to participate in a WSB. This was highlighted as a barrier to ATS.

To achieve the secondary purpose of this research, parents were asked how they could incorporate active travel into their children’s daily routine. Resulting verbatim was
Figure 2. Codes organized into barriers and facilitators for schools A, B and C.
read by each coder to extract relevant ways to incorporate active travel. Next, ideas were compiled and summarized for each school.

4.2.5 Trustworthiness

Participant recruitment, interviewing, and the scheduling of new interviews were conducted simultaneously. Brief field notes were taken during each interview to identify key ideas and take home points of each interview and to explore if there were any preliminary differences between parents or schools. Participants were recruited until it was considered that data saturation was reached (Guest, 2006). Saturation was monitored through an ongoing review of field notes and by reviewing the audio recordings. After all interviews were conducted, the analysis process commenced.

Trustworthiness was assured via three strategies: dependability, confirmability and reflexivity (Lincoln & Guba, 1985). Dependability and confirmability were assured through the use of a second coder (D. R. Thomas, 2006). Reflexivity was practiced by keeping a reflexive journal in which researcher introspections were recorded and subsequently reviewed (Guba, 1981). Each major methodological decision and rationale behind these decisions was documented. For example, coding decisions and the decision to cap the sample size were noted in the journal entries.
4.3 Results

Verbatim quotes corresponding to each “P” from the participant interviews are presented below. Quotes are identified by sex (M = male, F = female), school (SA = School A, SB = School B, SC = School C) and participant code from each interviewee. For example, School A – female interview number 4 = SAF4. Texts in brackets within quotes are used to clarify meaning of the verbatim. Quotes were edited to remove tics and filler-words in order to enhance clarity (Sandelowski, 1994).

Product

Product refers to the actual product being offered: a WSB. Parents from all three schools liked the idea that a WSB would allow their children to walk to school on a regular basis, which is often what the parent and child both desired as opposed to other forms of transportation. As one parent describes, “He wants to be able to walk to school. I like being able to provide that option to do something without his parents holding his hand.” (SCF5). A parent from the same school shared this view, “Well she wants to walk to school, again that would almost [be] on the time side of it.” (SCF2)

Another parent described how a WSB would be very useful to her because it would allow her children to walk to school, even when she is not available to supervise them.

Well I guess walking and biking places, this [WSB] seems very helpful to me because I work as a [profession], I’m on call. So I can’t rely on
taking her places all the time by, walking or biking or whatever. So, it’s very hard to do that when I’m not off call or something like that.

(SAF5)

Parents were excited about the potential opportunity for their children to be physically active before school and the importance of incorporating PA into their child’s daily routine. Across all three schools, parents had a positive outlook in regards to the benefits of participating in a WSB. Physical activity and social benefits were mentioned at all schools. One parent expressed the importance of ATS by highlighting that on some days of the week it would represent a majority of the amount of PA performed by some children, “That sometimes that [ATS] would be the only exercise that some kids would get in a day.” (SAF2).

The opportunity to perform some type of physical activity through ATS in a positive environment appeared to resonate with parents. Parents liked the idea of having their children perform some type of activity before the school day starts given the amount of time students would be sitting at their desks. One parent said: “I love the idea, I guess. Activity for the kids, getting them moving, getting some of that energy out before they start their school day and have to sit at their desks for a long period of time” (SCF2). Another parent liked the idea that a WSB would be a positive activity for her children to be a part of: “Just the exercise and being outside and walking to school with friends in a positive atmosphere” (SBF4).
Parents were also enthusiastic about the opportunity for their children to meet other kids who live within their neighbourhood and for the potential social benefits a WSB might bring. One parent talked about the potential for a WSB initiative to help them integrate into the community.

A couple of the benefits that come to mind are integration, in our case integrating into the community would be a little bit easier so [School A] draws from a huge area and the kids have friends, but their friends are not in their neighbourhoods because we don’t know who’s in our neighbourhood. (SAF1)

Parents discussed other positive social aspects such as positive emotions that may come from a WSB, as well as positive social interactions that may occur when their children walk together with other children in their neighbourhood: “Probably some good conversations, they can walk to school happy together” (SCF5). Another parent shared the view of a WSB being a positive method of transportation, “Positive outcomes, happiness, smiles on the children’s faces.” (SBF4).

Parents also discussed how a WSB might be a way to alleviate their safety concerns related to vehicle traffic. In particular, many parents had children who were in the younger grades of kindergarten through to grade 2, which made their safety concerns particularly salient. Parents also discussed how a WSB may also be a great way to encourage and teach ATS in a safe manner for younger children in preparation for a time when they will eventually travel to school without adult supervision, as one parent
described, “I think that it is a good way to make sure that our kids are safe walking on their own until they are old enough to be able to do it completely by themselves” (SCF1).

Another parent shared this sentiment of the WSB acting as an educational tool to promote safe ATS:

   So I would be looking forward to just having her being in a safe group with an adult who could walk her each day and make sure that they could see the oncoming traffic and whatnot that she might not see on her own. (SCF2)

One parent described how the WSB would be a great alternative to taking the bus, “I like the small group size, which is better than the bus you know 50-70 kids. I find it a safer mode of transportation, as well as the healthy” (SCF5).

**Price**

Price refers to the perceived disadvantages or costs related to the product (ATS or WSB) being offered. Price is also related to giving up other methods of transportation that would compete with a WSB.

Parents talked about how they would like for their children to walk to school, but that time was very short in the mornings. Given these time constraints, ATS in general was not a feasible option for them. She described, “It’s time, I have to walk her there, I have to make sure there’s somebody outside to supervise and then I have to come back home” (SCF1). Another parent shared the view of time being very short:
Well they are being driven. They could certainly walk. It’s not very far, it’s just timing perspective on my end I can’t, time in the morning specifically is very, very, very short. So walking to school and then walking home and then going to work isn’t feasible in that time frame.

(SBF1)

When parents were asked what they liked most about a WSB, they described how it might have the potential to help alleviate time concerns in the morning and how it might allow for their children to walk to school on a regular basis, “I like that on pressure days, if I have one kid sick or if I have a day job that’s not when I’m self-employed, then there’s a chance for my kids to keep walking to school” (SAF1).

In addition to time-related concerns, parents were also worried about the resources required to run a WSB in an efficient manner. In particular, concerns related to payment of the volunteers arose, as one parent described, “As far as cost goes I don’t know, if we pay our volunteers that would be awesome, because it would kind of motivate them more to get out the door and go” (SBF2).

One parent expressed concerns related to the resources available in a small town, “And us being a smaller town, I can see a bit of a difficulty, having the appropriate resources to, to run it.” (SCF1). One parent shared their concern about payment of the volunteers, but also explained that aside from paying the volunteers, the WSB shouldn’t be expensive to run.
It depends on how the volunteer, or the whatever the word is, the responsible adult portion works, I’m not quite sure how that is going to work or how it’s being proposed to work whether that is a volunteer position or a paid position or whatever. Outside of that individual and however that works out, I can’t see that there’s going to be a cost. (SBF1)

Other than resource-related concerns, parents also had concerns in relation to the volunteer’s ability to keep children safe. As one parent said, “I know parents would be nervous alone having the kids walking with somebody else and then even as the volunteer you have however many kids you want to make sure they’re all safe and they’re trying” (SAM7). Another parent shared these safety concerns, “The only disadvantage that I worry about is that because it would be a bigger group of kids, it’s just the safety is the biggest concern” (SBF2).

More specifically, across all three schools’ parents also had concerns about the dependability and safety of a WSB in all weather conditions and questioned whether or not it would be available even in situations where the weather does not allow for a pleasant commute, “But as a parent I would need to know that it’s going to be available every single day, you know even if the weather is really bad, snow, rain” (SBF4). One parent had concerns particularly related to the extremely cold temperatures, “Okay. I guess timing, it depends on what time they’re going by the house and weather, if it’s -30 I’m not gonna let the kids walk to school” (SCF4). These weather related concerns were shared by another parent who mentioned excessive snow and cold temperatures, “On like
days when it’s, the snow, in North Bay we get lots of snow it gets really cold. Do you send them out, like what’s the temperature range for that, what’s going to happen if they don’t?” (SAM1).

When discussing a WSB during the winter months, one parent described a particular concern regarding the accumulation of snow banks on streets surrounding the school, she explained how this would make her hesitant to allow her children to walk to school in the winter, “I don’t feel particularly confident to send my 6-year-old up ahead on the streets because of the snow banks. The (snow banks) are not just over her head, they’re over my head!” (SAF1).

When parents were asked about what they liked least about a WSB, several common concerns emerged. At all three schools, parents were concerned about the general reliability and consistency of the volunteers that would be chaperoning the children, and whether or not the WSB would be run in a consistent manner if it was to be led by volunteers. One parent said, “Well I guess having to recruit the volunteers, I think that might be quite a job and recruit people that will be consistent” (SAF4). A parent from school A shared these reliability concerns:

I don’t know. I think that being the person that can’t be reliable, the adult that can’t be reliable and something like this it’s important for me to have people who you can rely on. So not necessarily always relying on volunteers, that kind of thing. (SAF5)
A parent from school C stated, “So depending on the chaperone or the volunteer, making sure that it is an adult and that they’re there when they should be” (SCF4).

**Place**

Place refers to the physical place where a WSB or ATS will take place. When asking parents which routes or roads would be most appealing for a WSB, similar concerns were voiced by parents who had children attending school B and school C. In particular, there was a big concern around the lack of pedestrian-related infrastructure, specifically a lack of sidewalks in the surrounding neighbourhoods and leading up to the school. A parent from school C shared her concerns related to sidewalks, “Especially since some of the area’s leading to our school don’t have proper sidewalks, or [don’t] have a sidewalk without a boulevard between it and the road.” (SCF1). This concern was further shared by another parent from school C, “The route from our house to the school, there’s no sidewalks for a majority of the way” (SCF3). These concerns related to a lack of sidewalks were also found in school B, as one parent described, “The other thing is, I think in the back of my mind there are no sidewalks. There are absolutely no sidewalks where we live” (SBF1).

This concern wasn’t as apparent at School A where some of the roads surrounding the school having sidewalk coverage, “There’d have to be a sidewalk. High St. has a sidewalk part of the way, but not all the way, O’Brien and Jane St. both have sidewalks; I guess that’s probably the better route” (SAF4). Another parent from school A describes
her preferred route, “Any roads that have a sidewalk, [laughing] to be completely honest” (SAF2).

When asked about the specifics of route planning a WSB, responses varied based on school. However, across all three schools, parents mentioned that they felt that mutual meet-up spots or routes running along less travelled roads would be the most realistic way to run a WSB, as told by a parent, “Yeah I think the mutual meet up spot cross-street intersection or something where the kids could meet for a certain time” (SCF4). Other parents shared their preferences for route planning, as described below:

*I would say using a back route, so. Say from our place if somebody was to pick my son up, I would prefer to see them go up (side street) and then a couple of the back roads other than using (main street) which is a main through-fare. (SBF2)*

*If you know one straight route where people can either walk their kids to meet it or you know if they’re of age for walking, that they can walk up the little side street to meet the trottibus first or in time that feels reasonable. (SAF1)*

**Promotion**

Promotion refers to the promotion of the WSB, or informing parents about the WSB. When asked about the best way to inform parents about the WSB, interviewees suggested that electronic notices and paper handouts would be good ways. Across all
three schools, parents encouraged promotion through social media and electronic avenues such as Facebook and e-mail, as well as school-based communication such as paper promotion via classroom teachers. As a parent from school A mentioned, “Well, the regular e-mail updates that we get from the school and the Facebook posting that the school does” (SAF2). These sentiments were shared with a parent from school C, “The best I think is Facebook, we do have a parent that will put out into the cells (Facebook groups) and stuff. Social media is a good one” (SCF5), and school B, “The mailbag at school because every parent is conditioned to check their mailbag at school” (SBF1).

Parents also talked about the potential to promote the WSB or ATS through various initiatives or events at the school. They liked the idea of having promotional events in order to draw more attention to the WSB. This is highlighted below with several parents describing how important events are, on top of social media promotion. One parent liked the idea of information nights, “All of those ways I just mentioned. And one of those things I would do another information night, using all of those formats and then us really talking about it” (SCF5). Another parent described how they liked events where children could try out the WSB, “Like just kids walking in and having a couple of sites where they could walk from. You know, because I think that’s how it starts to feel reasonable to people” (SAF1).
Barriers, Facilitators and Recommendations for Incorporating ATS

The secondary purpose of this thesis was to explore barriers and facilitators related to a WSB and to identify ways children can incorporate active travel into their daily commute between home and school. As shown in Figure 2, parents from schools B and C mentioned the same four facilitators to a WSB: opportunity for PA, social opportunity, adult supervision and social media and paper notices. Parents from school A mentioned all of the same facilitators as parents from schools B and C, with the addition of sidewalks as a facilitator. There was also much overlap between parent perceptions of WSB barriers across the three schools, with all parents mentioning a lack of reliability and extreme weather conditions as barriers to ATS. Minor differences in perceived barriers were present across schools. Parents from schools B and C had concerns related to a lack of sidewalks, while these concerns were not present among parents from school A.

Also, concerns about convenience (i.e., fitting WSB into daily schedule, pick-up locations etc.) were only mentioned as a barrier by parents from school A. This could reflect the large number of parents who receive door to door bus service, or bus service in general at school A. In order for their children to participate in a WSB, several parents mentioned that it would have to be as convenient as their current bussing arrangement.
Figure 3 – School specific barriers and facilitators to a WSB and recommendations for incorporating ATS, with related verbatim

<table>
<thead>
<tr>
<th>School A</th>
<th>School B</th>
<th>School C</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Facilitators</strong></td>
<td><strong>Facilitators</strong></td>
<td><strong>Facilitators</strong></td>
</tr>
<tr>
<td>Opportunity for PA</td>
<td>Just the exercise and being outside and walking to school with friends in a positive environment** (F4)</td>
<td>Activity for the kids, getting them moving, getting some of that energy out before they start their school day and have to sit at their desks for a long period of time** (F2)</td>
</tr>
<tr>
<td>Social Opportunity</td>
<td>More engagement in the community because they would get to know people that they wouldn’t necessarily talk to** (F1)</td>
<td>“Meet and the social aspect of being with their peers in a group like that”** (F2)</td>
</tr>
<tr>
<td>Social Media / Paper Notices</td>
<td>Facebook definitely is a huge one I think. There’s a lot of groups that parents could share that information on** (F2)</td>
<td>“Probably the school’s Facebook site or anything that comes home in the backpacers”** (F4)</td>
</tr>
<tr>
<td>Adult Supervision</td>
<td>The activity level, and that it is supervised** (F1)</td>
<td>“Starting the day with exercise, again the small groups, social activity, you know walking with adult supervision to monitor behaviour is a positive thing”** (F5)</td>
</tr>
<tr>
<td><strong>Barriers</strong></td>
<td><strong>Barriers</strong></td>
<td><strong>Barriers</strong></td>
</tr>
<tr>
<td>Lack of reliability</td>
<td>I think you have to have committed volunteers and I think also like a call-out if somebody can’t be there** (F4)</td>
<td>“Is it gonna be something that’s going to be 100% reliable, and if people have doubts about that they may not use it and then it’s not gonna go anymore”** (F1)</td>
</tr>
<tr>
<td>Extreme weather conditions</td>
<td>“My daughter is in primary, so when it’s -25 or colder that then we drive and that’s it”** (F2)</td>
<td>“It depends on what time they’re going by the house and weather, if it’s -30 I’m not gonna let the kids walk to school”** (F4)</td>
</tr>
<tr>
<td>Lack of sidewalks</td>
<td>“The other thing is like, I think in the back of my mind there are no sidewalks, there are absolutely no sidewalks where we live”** (F1)</td>
<td>“The route from our house to the school, there’s no sidewalks for a majority of the way”** (F3)</td>
</tr>
</tbody>
</table>

**Recommendations for incorporating ATS**

**School A**
- Delineated School routes or maintained pathways
  - “I think a couple of delineated school routes or places that are just like maintained as a safe pathway, I think that would help”** (F1) |
  - Bus stops placed further from house
  - “So, I guess I feel that if they could walk further to a bus stop and get on the bus and go, I would be comfortable with that”** (F4) |

**School B**
- Playground supervision before school starts
  - “We would definitely allow our children to walk to school, even now, even without a walking school bus, I would be comfortable with that, it’s the hours that the school has supervision on the playground that don’t work for us because we start work at 8:30, the supervision doesn’t start until 8:30”** (F4) |

**School C**
- A check-in notification system
  - “A check-in, you know check-in system to make sure that they got there”** (F4) |
A limited number of recommendations for incorporating ATS were mentioned by parents, but there was no overlap in ideas across the three schools. Parents from School A made suggestions related to a combined commuting strategy that could involve a bus and ATS, whereas suggestions from parents at schools B and C were related to changes that could be made at the schools themselves (see Figure 2).

4.4 Discussion

This study used a social marketing approach guided by the 4 Ps to explore parental perceptions of a WSB in Northern Ontario. Social marketing has been shown to be a promising framework for promoting health at the individual and population levels (Gordon, McDermott, Stead, & Angus, 2006). Across all three schools the findings show that parents generally support a WSB and like the idea that it is a way for their children to walk in a supervised manner. The current findings are consistent with other studies showing that a WSB may be a way to help alleviate parental concerns about children participating in ATS (Henne et al., 2014; Kearns et al., 2003). Further, the findings confirm that parents support a WSB and demonstrate that a WSB may be a viable proposed strategy to increase ATS (Kearns et al., 2003).

Parents liked that a WSB had the potential to help their children walk on a consistent basis, as was the preference for most parents and children alike. This is similar to what has been reported in previous WSB literature, with enjoyment or preference of participating in ATS or a WSB as a method of transportation as an influential factor that may impact WSB participation (Kearns et al., 2003; Smith et al., 2015). This is an important finding, as promoting a WSB as a way to cater to parent and child preferences may be a way to encourage participation.
Across all three schools, parents were enthusiastic about the opportunity for their children to accumulate PA while participating in a WSB. Parent support for PA, which is similar to enthusiasm, has been shown to be positively associated with child PA (Gustafson & Rhodes, 2006). It is important that this enthusiasm and support is used to encourage children to participate in a WSB. This parent support is often key to the successful implementation of ATS initiatives (Buliung, Faulkner, Beesley, & Kennedy, 2008). This also suggests that participation in a WSB could contribute to children achieving PA recommendations, as has been shown with ATS in previous studies where kids who engage in ATS typically accumulate more minutes of MVPA than children who do not engage in ATS (Faulkner, Buliung, Flora, & Fusco, 2009; van Sluijs et al., 2009).

Parents liked that a WSB represents a potential opportunity to engage in positive social interactions with other children living nearby. This is similar to what has been found in other studies where participating in a WSB facilitated social interactions and enjoyment of ATS (Smith et al., 2015). This is a particularly interesting finding, as promoting the WSB as a way to foster positive social interactions may be appealing to parents and children alike.

When parents were asked about disadvantages or costs related to a WSB, concerns related to the resources needed to efficiently run the program arose. In particular, parents had concerns regarding the payment of parent volunteers. Most parents felt that these volunteers needed to be paid in order for the WSB to run in a reliable manner. In addition to resource-related concerns, parents from all three schools had specific concerns regarding the overall reliability of a WSB and whether or not having an unpaid volunteer would allow for the WSB to run consistently on a daily basis. The reliability concerns are similar to what has been reported
among parents prior to a WSB being implemented in New Mexico (Kong et al., 2009). This may be due to unfamiliarity of such initiatives and concerns about logistics and suggests that parents need to be educated on the specifics of the WSB in order to ease some of their concerns related to safety and reliability of the WSB.

Parents expressed worries regarding the harsh winter weather in Northern Ontario. This concern was present at all schools, and specific concerns related to the accumulation of snow banks were present at school A. These conditions may further contribute to safety concerns regarding the ability of the volunteers to keep the children safe. Previous studies investigating weather and ATS in urban areas in the Northeastern United States and Ontario, Canada have shown that there may be seasonal variation in ATS, with colder temperatures accounting for lower rates of ATS in the winter months (Saneinejad et al., 2012; Yang et al., 2011). However, another study conducted in an urban centre in Ontario reported no seasonal variation in ATS (Mitra & Faulkner, 2012). Therefore, it is important to note that while weather may have an impact in a non-urban, Northern environment, further research is needed to clarify the effects of weather on ATS in various environments. In order to eliminate potential weather-related barriers, school officials and public health should work closely with the city of North Bay and town of Parry Sound to ensure proper snow removal are a priority on WSB routes. This may help alleviate parent concerns related to excessive snow and in turn encourage participation in the winter months.

Concerns related to behaviour management while using the WSB were present across all three schools. Parents were particularly concerned with the volunteer’s ability to enforce positive behaviour while using the WSB. This finding is similar to what has been found in other WSB
studies, where the need for consistent enforcement of positive child behaviour is often brought up as a concern among parents (Kearns et al., 2003; Kong et al., 2009). This suggests that behaviour management training for the volunteers is needed to ensure that the WSB can run in a safe manner that encourages sustained participation from parents and children.

In regards to infrastructure and logistics, parent concerns differed slightly by school. Parents from Schools B and C voiced their concerns about a lack of sidewalks, which suggests that ATS initiatives in non-urban or predominately suburban single-land use areas may have additional barriers to overcome in relation to safety. This is similar to what is found in the literature; when parents of elementary school students living within 1.6 km of their children’s school were asked about barriers to ATS, a lack of sidewalks was commonly cited as being a barrier to ATS (Ahlport et al., 2008). Most parents from school A did not have strong concerns related to safety, probably because of adequate sidewalk coverage surrounding the school.

In terms of promoting the WSB, parents at all schools revealed that social media and school-based paper notices would be the best way to inform parents about the WSB. Parents liked the idea of receiving both electronic and paper communication and felt that it would be a great way to maximize the reach of our target population. The idea of promoting health through social media is becoming an increasingly common trend, with recent evidence suggesting that social media may be a great promotional tool for health promotion. In particular, understanding target audiences and tailoring messages to their preferences may be an effective way to promote health through social media (Korda & Itani, 2013). This information will allow for the health unit to direct their promotion efforts to social media by developing tailored messages and
Facebook social marketing campaigns, in addition to traditional methods of communication such as paper notices.

Parents from all three schools agreed that a WSB represents a great opportunity for safe, supervised ATS. A parent’s desire for safe, supervised ATS has been repeatedly cited in the literature exploring parent factors related to children’s ATS. Parents are supportive of ATS when it is conducted in a safe, supervised manner, such as a WSB (Henne et al., 2014). Taken together with findings from the current study, this suggests that when a WSB is implemented in the three schools, promoting it as a safe and reliable method of transportation may appeal to parents.

Sidewalks were considered to be a facilitator by parents from school A. Sidewalk coverage has been commonly cited as a key facilitator to ATS in students living within 1.6km of their school (Ahlport et al., 2008; Gropp et al., 2012). Although parents mentioned minor concerns related to route planning, these concerns might be alleviated by planning WSB routes on side-roads or on roads with adequate sidewalk coverage the entire way to the school.

Barriers however, differed slightly between school A and schools B and C. Parents from all three schools agreed that extreme weather and a potential lack of reliability would be a barrier to participating in a WSB. However, parents from school A cited that a lack of convenience relative to changing their current method of transportation (e.g., riding a school bus), might deter participation in a WSB, while this did not come up in interviews with parents from schools B and C. This is not surprising, as school A attracts students from a large catchment area where a majority of students are bussed, whereas schools B and C have many families living within 1.6km from their school who are responsible for their own method of transportation to and from
school for any child in grade one or higher (Near North District School Board, 2009). This finding related to convenience is supported by a study coming out of Toronto that explored parent decision making about school trip mode, with parents often opting for whatever is quickest and easiest for them (Faulkner et al., 2010). Therefore, promoting the WSB as an easy and convenient method of transportation may help encourage parents from school A to enroll their children. Special attention should be placed into the planning and implementation of a WSB to ensure that it runs in a similar manner to the bus, with consistent pickup times and stops in order to attract more parents from school A who may be hesitant to let their child participate in light of a perceived lack of convenience.

Parents from schools B and C mentioned that a lack of sidewalks would be a barrier to participation. A lack of sidewalks has been found to be a barrier to children’s ATS in previous studies (Eyler et al., 2008; Panter, Jones, & van Sluijs, 2008). While this may be a difficult barrier to overcome, extra attention should be placed into route planning to minimize safety concerns and to reduce the risk of injury.

When exploring parent ideas on how to incorporate active travel into their children’s daily routine, parents generally approved of activities that involved some type of parental supervision or safety feature. One parent suggested having adult supervision on the playground prior to school starting as a way to encourage ATS. Other ideas included a check-in system to ensure the safety of students and maintained pathways. Parent ideas regarding incorporating active travel largely revolved around safety which is similar to what is reported in the literature on parent related factors regarding children’s ATS, with safety and adult supervision often cited as ATS facilitators (Ahlport et al., 2008; Henne et al., 2014). While parents mostly focused on
safety, one parent suggested extending the distance children would walk to the bus stop each day as an alternative way to increase active transportation. This would be an interesting initiative to implement and evaluate, particularly for children living far away from their school. Due to North Bay’s large dispersion of dwellings (Statistics Canada, 2011a), innovative strategies such as this may play a key role in incorporating some type of active travel into children’s daily routines.

The information gained through this study will be used to develop a messaging strategy as part of a pilot WSB initiative at the three schools. Parents suggested that social media sites such as Facebook should be used to promote the WSB. This suggests that a social marketing campaign may be implemented with little or no cost with a large potential reach (Kirtiş & Karahan, 2011). When promoting a WSB or alternative travel strategies, focusing on the two key themes of safety and reliability may be the best way to appeal to parents and in turn encourage participation.

4.4.1 Study strengths

This study has several strengths. To our knowledge, this is the first study that explored parental perceptions of a WSB. While other studies have looked at the benefits of a WSB, and its potential to increase PA (Kingham & Ussher, 2007; Mendoza et al., 2012; Smith et al., 2015), this study focused on a specific initiative with relevant practical implications. Another strength is the use of qualitative data, which provided an in-depth look at parental perceptions of a WSB. Using qualitative methods provided a rich detailed description (Sofaer, 1999), which was useful because the results of interviews assisted the health unit in developing a WSB pilot project.
tailored to parental needs and concerns. Furthermore, the dual-coding of all transcripts aimed to reduce potential researcher bias, which is also a study strength (Shenton, 2004).

This study allowed for collaboration with the health unit. This partnership is a strength because it allowed for a direct dissemination and utilization of results, which has the potential for improving the health of school-aged children in Northern Ontario (Israel, Schulz, Parker, & Becker, 1998).

The inclusion of three different school sites in two different Northern Ontario cities provides an understanding of barriers and facilitators related to a WSB in a Northern region. This is particularly important because there is a lack of research to guide WSB interventions in non-urban centres such as Northern Ontario. The resulting understanding of parental perceptions may be used to assist in WSB implementation in both neighbourhood and feeder schools where a majority of children are bussed.

4.4.2 Study limitations

This study does have limitations that warrant discussion. The first limitation is the unbalanced representation of gender within our sample. Although all participating parents were the decision maker on how their children travel to school, 15 out of 16 parents interviewed were women. Although parental concerns related to ATS in urban settings typically don’t differ based on gender (Kerr et al., 2006), it may have been beneficial to have had a more balanced representation of gender in our study in order to explore if parental perceptions differ between genders in a Northern context. This limitation may have been overcome by allowing more time for recruitment of male participants in order to provide a greater picture of parent expectations of a WSB. It is important to note that all participants indicated an interest in their children using a
WSB. This is particularly important because in order for the WSB to be a successful initiative, one must understand how to position a WSB to appeal to parents in order for them to allow their children to participate. Another limitation is the lack of parents who were interviewed having older children. Most parents interviewed had children in the younger grades of kindergarten or grade one. The inclusion of parents with older children may have yielded different results, as ATS rates typically increase with age (Pabayo et al., 2010); it would have been interesting to see if parents of older children had the same concerns related to safety and supervision. This limitation could have been overcome if purposeful sampling technique was refined to ensure that there was an equal representation of parents who have children in the older grades. Although it would have been beneficial to include parents of older children, the main inclusion criteria for participation in the study was that the parent had to be the decision maker on how the child travels to school. This criteria was deemed more important as the parents of younger children typically have more of an influence on their child’s travel patterns (Henne et al., 2014). Another limitation that warrants discussion is interview duration. Although the interviews varied between 11 and 45 minutes, they averaged around 15 minutes. For the convenience of busy parents who have little free time in the evening and on weekends, many of interviews were conducted during the participants’ lunch hour; this might explain why they were somewhat brief. Despite their short duration, a great deal of information was gathered from participants. For example, it was discovered that northern environments face particularly salient barriers related to snow and harsh winter weather. In addition to this, parents mentioned that a WSB would be a great socialization tool to teach their children how to walk to school with others until they are old enough to walk alone. Also, I was able to launch into the interviews after only a brief introduction given that I
had met some of the participants prior to the interviews and had already an established rapport. My rapport with all interviewees was enhanced by sharing my own experience and understanding of the challenges to living in northern Ontario such as coping with extreme temperatures and cold weather.

Another study limitation is the potential lack of representativeness of the sample from which the parents were drawn. Since purposive sampling was used, the parents had some degree of interest in allowing their child to participate in a WSB. It would have been beneficial to include parents who were not yet necessarily on board with the idea of a WSB. This could have been achieved by expanding recruitment efforts to include parents who were unsure about allowing their child to participate in a WSB. The recruitment strategy for the study was via school newsletters and promotional events, however given that our results indicated that social media is a widely used medium by parents seeking information, focusing recruitment efforts through websites such as Facebook may have helped to recruit a more diverse sample of parents. Despite these limitations, this study has merit because it allowed for an in-depth exploration of parental perceptions that will allow for a WSB to be tailored to parent concerns and needs. The inclusion of parents residing both within and outside the bus eligibility range was particularly useful as it provides insight as how ATS initiatives may be initiated in a variety of settings.

In the fall of 2016, the WSB will be piloted in all three schools (two in North Bay and one in Parry Sound). Following pilot testing, it will be important for the health unit and the school board to evaluate the WSB so that they can better understand the successes and challenges of the initiative. Long-term studies are also needed in order to evaluate if a WSB
increases the proportion of students participating in ATS, as well as whether or not a WSB is a sustainable ATS intervention in a Northern region.
4.5 References


Carson, V., Kuhle, S., Spence, J. C., & Veugelers, P. J. (2010). Parents’ Perception of
Neighbourhood Environment as a Determinant of Screen Time, Physical Activity and Active Transport, 101(2), 124–128.


http://doi.org/10.1007/BF02766777


Early Adolescents. *Sports Medicine, 36*(1).


http://doi.org/10.1177/1524839911405850


http://doi.org/10.1016/S0967-070X(03)00019-2


http://doi.org/10.1016/j.healthplace.2011.07.004

Mitra, R., & Faulkner, G. (2012). There’s No Such Thing as Bad Weather, Just the Wrong Clothing: Climate, Weather and Active School Transportation in Toronto, Canada, (December), 35–42.


Chapter 5

General Discussion

5.1 Summary of the findings

The current study provides insight on parental perspectives regarding the potential implementation of a WSB at three different schools in Northern Ontario. A WSB is a commonly proposed strategy to increase ATS (Kong et al., 2009), and given that parents are the decision makers on how their children travel to school, exploring parent perceptions of ATS strategies like a WSB is highly relevant. This study has both theoretical and practical implications in the ATS domain. Theoretical implications include an improved understanding of parental perceptions related to a WSB, and ATS in general. The resulting inductive themes including benefits of ATS & WSB, resources required, safety concerns, general concerns, logistics and awareness as highlighted by parents can provide guidance for practitioners looking to initiate and promote a WSB in a northern region.

The findings show that parents generally support the idea of a WSB, and appreciate that it is a way for their children to increase their PA. This is similar to previous evidence showing that a WSB intervention for elementary school children increased the frequency of ATS and the amount of PA a child accumulates (Heelan et al., 2009). Consistent with the literature, parents also liked the idea that a WSB represents a way for their children to engage in positive social interactions with other children living in their neighbourhood (Smith et al., 2015). However, there were still concerns related to a lack of resources and potential reliability issues of a WSB such as not having the resources to pay for WSB operators, or having volunteers who may not
consistently show up. Safety concerns were present in regards to a lack of appropriate pedestrian related infrastructure in schools’ B and C surrounding neighbourhoods, which primarily related to safety concerns regarding traffic. Specific to a Northern environment, parents from all schools had concerns related to extreme winter weather and accumulation of snow, which further added to safety-related concerns. When asked about ways to incorporate active travel into their children’s daily routine, parents had a variety of ideas, most of which revolved around having some type of adult supervision present, which is a commonly cited facilitator to ATS (Ahlport et al., 2008; Henne et al., 2014). Other ideas parents gave were related to extending the distance of the bus stop from their home as a way to incorporate some type of ATS. As well, parents also suggested designated, maintained pathways and a check-in system to notify parents of their children’s arrival to school.

5.2 Strengths

This study has several strengths. To our knowledge this is the first study to explore parental perceptions of a WSB in the context of a northern environment as most of the literature to date has reported on WSB in urban settings, or settings with a warmer climate such as New Zealand (Heelan et al., 2009; Kingham & Ussher, 2007; Kong et al., 2009). The use of a social marketing framework was also a strength because it has shown promise for improving health at the individual and population levels, and has successfully been used with youth in the past (Gordon et al., 2006; F. L. Wong et al., 2008). The qualitative data collected provided an in-depth look at parental perceptions of a WSB, and was able to inform the health unit and assist with specifics of the development and implementation of a WSB. For example, preferred routes of a WSB, promoting the WSB electronically etc. The inclusion of three different schools in two
different Northern Ontario cities allowed for a picture of barriers and facilitators related to a WSB in a northern region. In addition, this study was unique as the sample included parents living within and outside of the bus eligibility zones, which allowed for consideration of ATS strategies alternative to a WSB for those living outside the 1.6km bus eligibility zone.

5.3 Limitations

This study does have limitations that warrant discussion. The first limitation is the unbalanced representation of gender within our sample. Although all parents included in the study were the decision maker on how their children travel to school, 15 out of 16 parents interviewed were women. Although a gender imbalance of parents interviewed may appear as a limitation, parental concerns related to ATS typically don’t differ based on gender (Kerr et al., 2006), and what is likely most important is having interviewed the parent who makes the transportation decision (Kerr et al., 2006). In the same way, interviewing parents with less interest in ATS might have also yielded some different findings. However, the sample did include parents from both inside and outside the bus eligibility range, which captured a detailed image of how a WSB may be implemented in both of these settings. Given that ATS correlates may be context-specific (Larouche et al., 2015), future schools hoping to initiate a WSB should incorporate diverse parental perceptions in order to better respond to parent needs and concerns. Another limitation is the lack of SES data from our sample. This would have been a beneficial addition to the study, as we know in other contexts such as in the United States, individuals with lower socioeconomic status typically have higher ATS rates (McDonald, 2008). This could have been measured through the use of the family affluence scale (Boyce, Torsheim, Currie, Boyce, &
Al, 2006), and would have helped to add to the understanding of correlates of ATS in northern Ontario.

Similarly, it would have been beneficial to specifically ask parents the gender of their children during the interviews. While it is known that there may be a slight gender gap in ATS rates between boys and girls in the United States (McDonald, 2012), this would have helped to establish if there was also differences in parental support for ATS based on gender in northern Ontario. Although given that the gender gap between boys’ and girls’ ATS (walking to school) rates are small, and not statistically significant (McDonald, 2012), this may be a very minor limitation. The interviews gathered information on how to promote a WSB to parents of children, regardless of their child’s gender. This is perhaps more important as ATS rates among Canadian children, both boys and girls remains low (ParticipACTION, 2016).

Lastly, it would have been advantageous to sample more parents with older children in grades 4 through 6. Most of our sample included parents of children in junior kindergarten through to grade 3. The inclusion of parents with older children may have yielded different results, as ATS rates typically increase with age (Pabayo et al., 2010), it would have been interesting to see if parents of older children had the same concerns related to safety and supervision. This may have been done via purposefully sampling to ensure that parents of older children were included, rather than a broader focus of sampling parents that had an interest in letting their child participate in the WSB and were the decision maker on how the child travels to school. However, parents of older children were not included in the sample because older children are more likely to participate in independent ATS (Pabayo et al., 2010), knowledge of how to market a WSB to the parents of younger children who may not be as likely to walk to
school was particularly important. Lastly, the representativeness of this study to the entire region of northern Ontario should be approached with caution. Although North Bay and Parry Sound are technically part of northern Ontario (Northern Ontario Heritage Fund Corporation, 2011) and fall within the same catchment area for the health unit, they are at the southernmost part of the region and regions further north may have vastly different landscapes and challenges to ATS.

### 5.4 Implications

The use of a social marketing approach, guided by the 4 P’s will allow for the development of tailored messages to promote the WSB. For example, the findings suggest that messages should use social media advertisements to promote the WSB as a safe, healthy, and reliable form of transportation. Another important message to convey would be that a WSB is an easy, enjoyable way to engage in PA and an excellent opportunity to foster positive social interactions with other children living nearby. A WSB is also a great way to partake in ATS in a safe, supervised manner and can teach children how to walk to school safely with an adult, until they are old enough to walk alone. It may also be an opportunity for parents and children to meet neighbours living nearby, which might contribute to the development of a sense of community.

The current findings also shed light on the barriers and facilitators related to a WSB in a Northern region. Given that one of the barriers was related to reliability of the WSB leaders, ATS initiatives at the three schools should consider paying volunteers to increase the reliability of the WSB as a strategy to potentially increase participation. This paid-model has been implemented with great success in Ottawa and has helped to reduce reliability concerns amongst key stakeholders (Beaton, 2015). Special consideration should be given to route planning to
ensure that the WSB is an easy and convenient method of travel for parents and children alike; this may appeal particularly to parents from school A who cited a potential lack of convenience as a reason not to participate. School board officials and public health should work with city officials to ensure that snow removal is prioritized in the areas surrounding the schools to remove weather-related barriers.

Finally, we were also able to identify ways in which ATS could be incorporated into students’ daily commute as suggested by parents; this will help the North Bay-Parry Sound District Health Unit and local school travel planning committees propose ideas to the local school board. Such ideas may include a check-in notification system to ensure children arrive at school safely, placing bus stops further away from houses, and playground supervision prior to school starting. The information gained through this study will be used by the North Bay Parry Sound District Health Unit to develop a messaging strategy in relation to a WSB and to ATS alternatives. Given that key stakeholders were engaged early in the research process; the development of a sustainable WSB initiative may come to fruition. The WSB will be piloted at all three schools starting in October 2016.

5.5 Future Directions

Northern Ontario communities face extra challenges in regards to active transportation to school, which include a lack of pedestrian infrastructure, and harsh winter weather. Future research opportunities lie in exploring the persuasive impact of a social marketing campaign using messages tailored to parental preferences and concerns. Further research opportunities may
include incorporating more schools in Northern Ontario, outside of North Bay and Parry Sound, in order to evaluate the effectiveness of messages in a Northern region.

Future research should also explore barriers and facilitators to ATS and a WSB in other Northern regions, specifically rural areas, which are currently lacking in research. This may be evaluated through a variety of methods such as traffic counts and hands-up surveys (de Wit, Loman, Faithfull, & Hinckson, 2012). If rates of ATS are low, it may signify that there are many barriers to ATS in a particular region. Facilitators should be leveraged to promote ATS with hopes of increasing participation as measured by traffic counts or hands up surveys (de Wit et al., 2012).

5.6 Conclusion

In general, findings from the current study suggest that parental concerns regarding ATS are similar to those of parents in more urban settings (Henne et al., 2014), although concerns about weather-related barriers to ATS seemed especially salient. Further research is warranted in a northern Ontario context to investigate optimal strategies to address these and other concerns as a way to enhance ATS in children.
5.7 References


http://doi.org/10.1016/j.puhe.2014.05.004


http://doi.org/10.1249/01.mss.0000210208.63565.73


http://doi.org/10.1038/ijosup.2015.25


http://doi.org/10.1016/j.amepre.2008.01.004


ParticipACTION. (2016). Are Canadian Kids Too Tired To Move?


Appendix A – Map of Ontario
Appendix B – Classroom Survey

Dear Parents,

The Safe School Travel Planning (SSTP) Committee at Alliance FIPS would like to start a Walking School Bus in partnership with the Canadian Cancer Society for the 2016-2017 school year, to enable young students to walk safely to school with adult supervision. Please fill out this short survey to give us an idea about your interest in this project.

**DID YOU KNOW?**

- A walking school bus is a healthy, active and safe mode of school transportation, where children are accompanied from home to school by a walking school bus ‘conductor’ (a parent or volunteer). Students in the same neighbourhood walk together along a designated walking school bus route. Like any school bus, the walking school bus has planned stops as well as a schedule. You can see it in action by visiting [www.trottibus.ca](http://www.trottibus.ca).

- Only 7% of Canadian children between 5 and 11 years old meet the Canadian Physical Activity Guidelines, which recommend at least 60 minutes of moderate physical activity per day for children and youth. The Walking School Bus is a way of allowing children to exercise a little more each day.

- The routes will be established according to demand and urban design. If several parents from your neighbourhood show interest, a route near your home could be planned.

---

1. Would you be interested in having your child participate in the Trottibus Walking School Bus?
   - YES
   - NO Please indicate the reason: ________________________________

2. How does your child usually go to school?
   - Walking
   - Biking
   - By car
   - By school bus
   a.) If you usually drive to school, would you consider dropping your child off along the Walking School Bus route? Y / N

3. To be able to offer the Trottibus Walking School Bus service, the committee will need your help. Would you be interested in getting involved in the project? (Feel free to select more than one)
   - Walking (1 to 5 mornings per week)
   - Getting involved in the organizing committee
   - Filling in for someone when required
   - Helping promote it in the school or the community
   - Brief meeting with a researcher to discuss your thoughts about a Walking School Bus ($20 incentive provided)

Name: ___________________________________ Telephone: ______________________________
E-mail: ___________________________________ *Feel free to write us your thoughts on the flipside of this page 😊

---

Appendix C - Verbal recruitment script for Parent Information Night

Hi, my name is Darran and I’m a student from Queen’s University who is working on the walking school bus project with the North Bay Parry Sound District Health Unit. Do you have a few minutes to talk about participating in a project where you could offer suggestions related to the walking school bus initiative?

*If response is “No”:*
Thank you for your time. Enjoy your day.

*If persons would like more information or response is “Yes”:*

**Points to mention about the study:**

* It is a collaborative project between the North Bay Parry Sound District Health Unit, Queen’s University School of Kinesiology and Health Studies and Nipissing University School of Physical and Health Education
* We are interested in learning more about how to develop and promote a walking school bus initiative in (North Bay or Parry Sound).
* We are inviting parents who are the decision-makers on how their children get to school, and who have children in grades 1-6 who are bussed or driven most of the time, to participate in an interview.
* The interview will be related to barriers and facilitators of participating in a walking school bus. We would like to find out more about what parents think about this initiative and how we may be able to tailor a walking school bus to suit the unique needs of parents and children in Northern Ontario.
* As a thank you for your time, you would receive a $20 gift card to a local sports store (e.g. Sport Chek).

Would you be interested in participating?

*If response is “No”:*
Thank you for your time. Enjoy your day.

*If persons would like more information or response is “Yes”:*
Proceed with consent form.
Appendix D – Parent Interviews: Information Letter and Consent Form

What is the title of this research study?
Exploring Parental Perceptions of a Walking-School-Bus Initiative in Northern Ontario

Who is doing this research?
Darran Atrooshi, MSc Candidate, School of Kinesiology & Health Studies, Queen’s University
Tel: 705-845-6073 email: d.atrooshi@queensu.ca

Co-Investigators: Brenda Bruner, Nipissing University; Lucie Lévesque, Queen’s University

Knowledge Users: Alex Mayer, North Bay Parry Sound District Health Unit

This study is funded by the Canadian Institutes for Health Research, Institute of Population and Public Health, in collaboration with the North Bay Parry Sound District Health Unit.

Background: Studies show that most children and youth in Canada do not accumulate the recommended amount of physical activity. Low levels of physical activity in children and youth are associated with negative effects on psychological well-being and increased risk for chronic diseases into adulthood. A walking school bus may be a means to increase physical activity and promote healthy behaviours in children and youth.

Why are we doing this study?
We are conducting this study to gather parental perceptions of a walking school bus initiative. We want to learn more about potential barriers and facilitators to student participation in a walking school bus. We also want to learn how we can effectively design and promote a walking school bus in a northern community.

You are being invited to participate in this study.
What will you do during the study? For this part of the study, we will be conducting one-on-one interviews with individual parents

We will ask a series of twenty-two (22) questions relating to beliefs and feelings about a walking school bus initiative. The interview will take about one hour of your time.

If you agree to participate in the study, you will be contacted by a research team member who will arrange for an interview via telephone or skype. With your permission, these interviews will be recorded, transcribed and analyzed by our research team. If you are not comfortable with being recorded, the interviewer will take detailed notes.
Voluntary Nature of the Study: Participation in this study is voluntary. Your choice of whether or not to participate will not influence your future relations with the North Bay Parry Sound District Health Unit, with your child’s school, or with the universities conducting the research.

If you decide to participate, you may refuse to answer any question or to stop the interview at any time by indicating your wish to the interviewer. At your request, any information provided will be deleted.

Benefits: There are no known benefits to participating in this type of study. However, your contributions may help us understand how to effectively develop and promote a walking school bus initiative.

Risks: There are no known physical risks to participating in this type of interview. The only risk is the potential for inadvertent disclosure of personal information. To protect your personal information, the research team will do the following:

- Your identity (first name and last name) will not be shared. Instead, you will have a participant number. Your identity and your participant number will be stored separately in a locked filing cabinet.
- When we transcribe your interview, we will remove any identifying information (e.g. name, street address).
- All data will be locked in a filing cabinet at Queen’s University. It will be accessible only to the research team. Electronic data will be password protected and stored behind a computer firewall.
- All of the collected data will be kept until December 2026. After 2026, all data will be destroyed and/or erased.
- The list of participant names and codes will be destroyed in December 2026.
- Confidentiality will be maintained to the extent allowed by law.
- Only anonymized data (data with names and identifying information removed) will be used in any publications/conferences.
- The data will not be used to evaluate you in any way.

Compensation
You will be given a $20 gift card to a local sport store for your participation in the study.

Questions about the Study:
Please keep your copy of the letter of information. If you have any questions about the project now, please ask. If you have questions, concerns, or complaints about this project, please contact:

Darran Atrooshi, Principal Investigator, (705) 845 6073, d.atrooshi@queensu.ca
This study has been approved according to the recommended principles of the Tri-Council Policy Statement on the Ethical Conduct for Research Involving Humans and the policies of Queen’s and Nipissing Universities. The Tri-Council is a policy that makes sure research is done in a good way. In addition, this study has been approved by the Near North District School Board.

If you have questions regarding your rights as a human subject and participant in this study, you may contact any of the following University Research Ethics Boards for information:

General Research Ethics Board
C/o Office of Research Services
Fleming Hall-Jemmett Wing.
Queens University
Kingston, ON K7L 3N6
(613) 533 6000 x 78281
Joan Stevenson
chair.GREB@queensu.ca

Research Ethics Board
Nipissing University
100 College Drive, F 309
North Bay, ON P1B 8L7
(705) 474 3450 x 4055
Martee Storms
ethics@nipissingu.ca
Consent to Participate:

I, _______________________________ [print name], hereby agree to participate in the Exploring Parental Perceptions of a Walking-School-Bus Initiative in Northern Ontario study. I have had a chance to ask questions about my participation and have had my questions answered to my satisfaction.

My participation in this study is my choice. I understand that I can withdraw for any reason at any time by contacting Dr. Brenda Bruner, Tel: 705-474-3450 ext. 4069, email: brendab@nipissingu.ca; Lucie Lévesque, Co-Investigator, (613) 533-6000 x 78164, levesqu@queensu.ca or the interviewer.

I understand that my confidentiality will be protected with proper data storage and that only anonymized data will be reported and published.

**Digital Audio-Recording:**
- □ I agree to the interview being audio-recorded
- □ I do not agree with the interview being audio-recorded. In this case, the interviewer will hand write my responses.

**Copy of the consent form:** I have received a copy of the consent form for my information.

Name of Participant (please print)     Signature of Participant

_____________________________                   ______________________

_____________________________

Date
Appendix E – Ethics Approval

December 21, 2015

Dr. Brenda Bruer
Adjunct Assistant Professor
School of Kinesiology and Health Studies
Queen’s University
28 Division Street
Kingston, ON, K7L 3N6

Dear Dr. Bruer:

RE: Amendment for your study entitled: CPHIE-171-14 Implementation and Impact Evaluation of a Safe Active School Travel Planning Program, ROMOSUF46012956

Thank you for submitting your amendment requesting the following changes:

1) To verbally recruit parents at parent information nights organized by the North Bay Parry Sound District Health Unit in regards to a walking school bus in Parry Sound and North Bay, to participate in a one-on-one interview;

2) Letter of Information / Consent Form (v. 2015/12/21);

3) Recruitment Script (v. 2015/12/21);

4) Interview Guide (v. 2015/12/21).

By this letter you have ethics clearance for these changes.

Good luck with your research.

Joan Stevenson, Ph.D.
Chair
General Research Ethics Board

c. Ms. Shannon Martin, Dr. Graydon Raymer, Dr. Kristine Karvonen, Dr. Dean Hay, Mr. Alex Mayer, Dr. Lucie Levesque, Dr. Greg Richardson, and Dr. Darun Ahmadi, Co-investigators
Ms. Donna Irwin and Ms. Valaine Conferno, Research Coordinators
Mr. Devyn Richards, Research Assistant
Appendix F – Interview Guide

Welcome: Thank you for taking time out of your busy schedule to talk to me today. The purpose of today’s interview is to gather opinions on active transportation to school, specifically related to the potential implementation of a walking school bus. A walking school bus is a group of children walking to school with one or more adults. There are no right or wrong answers, and your opinion is very important to us. You are free to skip any interview questions, and if at any time you feel uncomfortable you do not have to continue with the interview.

Do you have any questions for me before I begin?

[ASK PERMISSION TO START TAPING]

Introductory questions:
- How many children do you have attending [insert school name here]?
- What grades are your children in?
- Approximately how far away do you live from your child’s school?
- Describe the most common way that your child(ren) travel to school.
- What do you think are some of the benefits of your child’s current method of travel?
- What do you think are some of the downsides of your child’s current method of travel?
- Have your travel patterns changed over time? If so, how?
- What comes to mind when you hear the phrase active transportation to school?

Key Questions:

Product
What do you see as the advantages/benefits of active transportation to school?

Probe: Social reasons? Physical Activity? Safety?

What do you think would be some ways to incorporate active travel into your child’s daily routine? Probe: Safe routes? Car Free Zones? Parental Supervision? Sidewalks?

For each example they give, ask:

What do you like the most about this idea?

What do you like the least about this idea?

[Question directly below is only for parents who live more than 1.6 km away from the school]

What do you think of the idea of a “park and drop” location where kids would be dropped off away from the school and walk the rest of the way?

What do you like the most about this idea?

What do you like the least about this idea?

What do you think of the idea of a “walking school bus” where kids would be dropped off away from the school and walk the rest of the way? [for parents who live more than 1.6 km away from the school]

What do you think of the idea of a “walking school bus” where kids would walk in an adult-led group from home to school? [for parents living within 1.6 km from the school]

What do you like the most about this idea?
What do you like the least about this idea?

What are some of the potential benefits of participating in a walking school bus?
Probe: Physical activity? Safety? Social benefits?

Price

What do you see as the disadvantages/costs related to a walking school bus?
Probe: Time consuming? Tiring? Exposure to extreme weather?

What might prevent your child from participating in a walking school bus? What might prevent you from allowing your child(ren) to participate in a walking school bus?

What other modes of transportation to school might compete with your decision to allow your child to participate in a walking school bus?

Place

What do you feel is an appropriate walking distance for your child?
Probe: In minutes? In distance?

What routes or roads are most appealing for a walking school bus?

Logistically, what would be the best way to run a walking school bus?
Probes: Door-to-door pickup? Mutual meetup spot?

Where are parents most likely to notice messages that focus on/encourage ATS?
Promotion:

What would be some of the best ways to inform parents about the walking school bus? Probe: Newsletters? E-mails? Word of mouth? Social media?

SUMMARIZE SESSION

Final Question: Is there anything that we missed or anything you would like to add?

END RECORDING

THANK PARTICIPANTS AND REMIND THEM THEIR GIFT CARD WILL ARRIVE BY MAIL.