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RESEARCH ARTICLE

Happiness in Motion: Emotions, Well-Being, and Active School Travel

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ABSTRACT

BACKGROUND: A pan-Canadian School Travel Planning intervention promoted active school travel (AST). A novel component was exploring emotion, well-being, and travel mode framed by the concept of ''sustainable happiness.'' Relationships between travel mode and emotions, parent perceptions of their child's travel mode on well-being, and factors related to parent perceptions were examined.

METHODS: Questionnaires were administered to families (N = 5423) from 76 elementary schools. Explanatory variables were demographics (age and sex), school travel measures (mode, distance, accompaniment by an adult, safety, and barriers), and emotions (parent and child). Outcomes examined parent perceived benefits of travel mode on dimensions of well-being (physical, emotional, community, and environmental). Descriptive statistics, chi-square tests and hierarchical regression were used.

RESULTS: Parents and children who used AST reported more positive emotions versus passive travelers. Parents of active travelers reported stronger connections to dimensions of well-being. AST had the strongest association with parents' perceptions of their child's well-being, and positive emotions (parent and child) were also significantly related to well-being on the trip to school.

CONCLUSIONS: As an additional potential benefit of AST, interventions should raise awareness of the positive emotional experiences for children and their parents. Future research should experimentally examine if AST causes these emotional benefits.

Keywords: emotional health; child health; adolescent health; program planning; program evaluation.

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Canadian and international guidelines recommend at least 60 minutes of daily physical activity for healthy development of children.[1,2] The use of active school travel (AST) like walking and cycling has been identified as an opportunity for young people to incorporate physical activity into their daily life and assist in meeting this recommendation.[3,4] Evidence confirms that children who use AST are more physically active overall than children who travel by car or bus.[5] This needs to be considered in light of consistent evidence of declining AST in most Western countries[6-10] and even in low- and middle-income countries such as Vietnam.[11]

Given declines in AST, Safe Routes to School programs have emerged in industrialized countries around the world.[12-14] In Canada, the Safe Routes to School movement has been guided by Green Communities Canada and delivered by provincial and territorial nonprofit organizations. In recent years, programs referred to as ''School Travel Planning'' (STP), were piloted in 4 provinces[14] and then expanded across the country. Led locally by an STP Facilitator, communities formed

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municipal steering committees (eg, mayors, municipal councilors, and transportation engineers) and school steering committees (eg, students, parents, and teachers) to identify specific needs and priorities to promote AST. Multipronged action plans were then developed that usually included infrastructure changes, special events, and organized walking or cycling groups.[15]

Internationally, AST programming and evaluation has largely examined physical outcomes from the associated physical activity,[12,13] with little attention to the potential psychosocial outcomes of AST, like positive emotions, building relationships with friends, and getting to know the neighborhood.[16] A novel component of the Canadian STP expansion was an examination of whether school travel mode was related to emotion and well-being, framed by the concept of ''sustainable happiness.''[17] According to O'Brien,[17] sustainable happiness bridges the areas of sustainability and positive psychology, chiefly emphasizes the interdependence of all living things, and underscores the relationship between human and ecological flourishing. Thus, positive emotions that individuals experience while engaging in sustainable behavior such as walking and cycling are examples of sustainable happiness and may be more likely to persist if individuals are aware that their actions contribute to their own personal well-being as well as the well-being of other people and/or the natural environment.[17-19] Moreover, it is theorized that a positive feedback loop exists whereby emotions like feeling happy or relaxed reinforce our actions, and make us more likely to repeat them. When viewed through the lens of sustainable happiness, families that have the option of using AST, including those who live close enough to school and have a safe route to travel may choose to do so on a regular basis if they experience positive emotions while walking or cycling and/or recognize the beneficial individual, community, and environmental implications of AST. Alternatively, positive emotions might encourage engaging in sustainable behavior like AST.

The purpose of this study was to analyze associations between active travel to school and indicators of sustainable happiness and well-being among Canadian children and their parents at the STP expansion schools. As the first empirical exploration of sustainable happiness in school travel, it was important to examine both parent and child perceptions, as opposed to focusing only on children's perceptions. Parent perceptions were also considered important because the children studied were young, mostly in kindergarten to grade 8, and pilot research and other school travel studies have shown that parents are primary decision makers when it comes to their child's school travel mode.[14,25]

METHODS

Participants and Procedure

Baseline questionnaire data were received from a sample of parents (or primary caregiver) and children from schools in all Canadian provinces (except Quebec) and the Northwest Territories taking part in STP. Data reported are from a subsample of 76 schools and 5423 students with complete data for all variables of interest. Data were collected between September 2010 and October 2011. Schools were identified and selected by a provincial or territorial STP facilitator in consultation with the Municipal Steering Committee and/or the School District/Division/Board. School inclusion criteria varied, but in general, the school had elementary grades (ie, kindergarten to grade 6 or kindergarten to grade 8), and there was willingness for the school to contribute staff time and facilitate participation. Facilitators distributed questionnaires to students in classrooms to complete at home with their parents. One parent (if applicable, the parent usually accompanying the child to school) completed the questionnaire; questionnaires were filled out for the eldest child attending the school. Students returned the questionnaires to their teachers, and the STP facilitators collected them. Active consent was obtained at the school-level, and family participation was voluntary.

Family Questionnaire Variables

Demographics. Parents reported the age and sex of their eldest child attending the surveyed school. Facilitators recorded the school province or territory.

School travel measures. Parents recorded how their child usually travels to school (by car, carpool, school bus, public bus, walking, bicycling, subway or streetcar, and other) and distance from school (less than 500 m, 0.5 to 1.5 km, 1.5 to 3 km, more than 3 km). Parents were also asked if their child traveled alone or was escorted by an adult. In addition, attitudes toward the following constructs were examined: neighborhood safety (''our neighborhood is safe for children to walk to school'') and barriers to active travel (''there are no major barriers to walking in my local neighborhood that make it hard to get from place to place—freeways, heavy traffic, railway lines, rivers''). Response options were 1 = strongly disagree, 2 = disagree, 3 = agree, and 4 = strongly agree. School travel variables were developed and tested in the STP pilot study.[15]

Emotional perceptions. Emotional perceptions of travel mode were captured in 2 exploratory items. Parents were asked: ''How do you usually feel on the trip to school?'' and selected 1 response from a list of 12 emotions (relaxed, rushed, happy, bored, energized, anxious, content, tired, frustrated, calm, distracted, and curious). An open category of ''other'' was also included, as well as an option to indicate

that the parent did not accompany the child to school. Children were asked, through their parent, how they usually feel on the trip to school and selected one response from a list of 8 emotions (excited, tired, curious, bored, relaxed, worried, happy, and rushed). The 12 emotional categories for parents and 8 emotional categories for children were generated based on previous research conducted by the project's academic partners at Cape Breton University. It was important to provide a range of emotional response categories: (1) for the purposes of exploration, (2) to reduce the tendency for socially desirable responses, and (3) to provide a selection of positive and negative emotions. Feedback about the emotional categories was sought from the provincial and territorial project leads to ensure readability and ease of comprehension by parents and children in their regions. The parent emotion categories of ''energized'' and ''anxious'' were simplified for children as ''excited'' and ''worried.'' Four parent emotional categories: content, frustrated, calm, and distracted were not included for children because they were thought to be too challenging for children to distinguish from other emotions.

Outcome measures: benefits of travel mode on dimensions of well-being. Four items examined sustainable happiness[17] in relation to school travel, ie, whether parents perceived that there were relationships between their child's travel mode to school and aspects of well-being. Parents were asked ''The way my child usually travels to school contributes to his/her: (1) physical well-being—healthy heart, bones, and muscles, (2) emotional well-being—happiness and relationship with friends, (3) well-being of our community—students get to know their neighborhood, and (4) environmental well-being—less pollution. The examples following each dimension of well-being were generated in consultation with the provincial and territorial project leads. Responses were along a 4-point Likert scale (1 = strongly disagree, 2 = disagree, 3 = agree, and 4 = strongly agree) to be consistent with questions examining barriers to active travel and perceptions of safety.

Data Analysis

Data were entered and coded by STP facilitators using an Excel application and then imported into SPSS version 20.0 (IBM, Armonk, NY) for analysis. Descriptive characteristics (mean [M], standard deviation [SD], and range or percentage) were calculated. Travel mode responses were described separately and dichotomized into passive (car, carpool, school bus, public transit, and other) and active (walking and bicycling) modes. A new dichotomized variable was created to indicate whether the child was accompanied or not accompanied by a parent to school. Emotional perceptions were described separately and then dichotomized into positive or negative emotions. Parent positive emotions were relaxed, happy, energized, content, calm, and curious; parent negative emotions were rushed, bored, anxious, tired, frustrated, and distracted. Child positive emotions were excited, curious, relaxed, and happy; child negative emotions were tired, bored, worried, and rushed.

Pearson chi-square tests were used to examine differences in adult and child emotions to school by travel mode. Hierarchical regression was used to examine associations to 4 dimensions of well-being: physical, emotional, community, and environmental. Eight independent variables were examined: age; sex (referent: male); distance to school; travel mode to school (referent: passive); no major barriers for active travel; neighborhood is safe for active travel; adult emotion (positive, child travels to school unaccompanied, referent: negative); child emotion on the trip to school (referent: negative). Because the outcome measures prompted parents to think about their child's travel mode, travel mode was entered in the first block. All independent variables were entered simultaneously in the second block. A significance level of $p < .05$ was used to interpret all statistical tests.

RESULTS

Demographic Characteristics and School Travel Measures

Children were on average 8.7 years old (SD = 2.5), with equal proportions of boys and girls (Table 1). A large proportion lived within 1.5 km of their school (65.6%). Parents generally agreed that their neighborhood was safe (66.2%), and there were no major barriers for active travel (67.4%). Most children traveled with a parent (69.0%). Among children who traveled without a parent, the majority took the school bus (56.1%) or walked (40.0%) (Table 2). The top 3 travel modes were car (39.8%), walking (36.8%), and school bus (17.4%).

Parents indicated strong agreement that their child's travel mode contributed to all 4 dimensions of well-being (Table 3). Of the dimensions, benefits of travel mode on emotional well-being received the highest mean rating (M = 3.16 out of 4, SD = 0.71). The majority of parents and children reported positive emotions on the trip to school, regardless of travel mode (Table 4). At the same time, significant and large differences in positive emotions were seen between parents who traveled with their child using active modes (73.6%) and those who traveled by passive modes (55.1%), X^2 (1, N = 5423) = 126.39, $p < .001$. In addition, parents who traveled with their child using active modes reported fewer negative emotions (26.4%) compared with those who traveled using passive modes (44.9%). A similar trend was seen with

Table 1. **Demographic and School Travel Measures (N = 5423)**

Characteristic	Mean (SD)	% of Sample or Range
Child age	8.70 (2.48)	3-15
Child travels to school with a parent	8.37 (2.39)	69.1
Child travels to school without a parent	9.43 (2.51)	30.9
Child sex		
Girl		50.0
Boy		50.0
Province/Territory		
British Columbia		29.3
Alberta		7.0
Saskatchewan		4.4
Manitoba		9.7
Ontario		25.7
New Brunswick		4.7
Nova Scotia		10.0
Newfoundland		12.4
Prince Edward Island		2.2
Northwest Territories		1.6
Distance from school (km)		
<0.5		20.3
0.5-1.5		41.8
1.5-3.0		21.0
>3.0		16.9
No major barriers for active travel	2.82 (0.95)	1-4
Neighborhood is safe for active travel	2.69 (0.83)	1-4

Child ages ranged from 3 to 15 years as some schools had preschool classes and other schools were from kindergarten to grade 12. For the continuous variables (age; no major barriers for active travel; neighborhood is safe for active travel), the mean (standard deviation) and range are reported.

Table 2. **Travel Mode to School (N = 5423)**

Travel Mode	(N = 1677) Child Traveled to School Without a Parent N (%)	(N = 3746) Child Traveled to School With a Parent N (%)	(N = 5423) Total N (%)
Passive	983 (58.6)	2375 (63.4)	3358 (61.9)
Car	20 (1.2)	2137 (57.0)	2156 (39.8)
Carpool	4 (0.2)	215 (5.7)	219 (4.0)
School bus	941 (56.1)	0 (0)	941 (17.4)
Public transit	18 (1.1)	23 (0.6)	41 (0.8)
Other (eg, shuttle bus)	0 (0)	0 (0)	0 (0)
Active	694 (41.4)	1371 (36.6)	2065 (38.1)
Walking	671 (40.0)	1325 (35.4)	1996 (36.8)
Bicycling	23 (1.4)	46 (1.2)	69 (1.3)

Table 3. **Parents' Perceived Benefits of Child's Travel Mode to School on Dimensions of Well-Being and Parent and Child Emotional Perceptions of School Travel (N = 5423)**

Characteristic	Mean (SD)	% or Range
Travel mode to school and dimensions of well-being		
Physical well-being	2.92 (0.96)	1-4
Emotional well-being	3.16 (0.71)	1-4
Community well-being	3.01 (0.79)	1-4
Environmental well-being	2.93 (0.94)	1-4
Parent emotion on the trip to school (N = 3746)		
Positive		61.9
Relaxed		22.4
Happy		15.5
Content		11.9
Calm		8.1
Energized		3.6
Curious		0.4
Negative		38.1
Rushed		29.8
Frustrated		3.4
Anxious		2.2
Bored		0.4
Tired		2.0
Distracted		0.3
Child emotion on the trip to school		
Positive		64.9
Happy		26.7
Excited		18.6
Relaxed		16.2
Curious		3.5
Negative		35.1
Tired		14.7
Rushed		9.8
Bored		8.4
Worried		2.2

For travel mode to school and dimensions of well-being, the mean (standard deviation) and range are given. Parent emotion on the trip to school was only asked of parents who accompanied their child to school (eg, did not include parents of children who traveled alone or by school bus).

child emotions, with significantly higher proportions of active travelers reporting positive emotions compared with passive travelers. Differences were not as large as with parents. Furthermore, parents of active travelers reported significantly higher perceptions of physical, emotional, community, and environmental well-being compared with parents of passive travelers ($p < .001$).

With respect to the hierarchical regression, in the first step, travel mode to school was associated with all dimensions of well-being, accounting for 34% of the variance in perceptions of physical well-being, 10% of emotional well-being, 20% of community well-being, and 30% of environmental well-being (Table 5). Specifically, parents of active travelers perceived stronger connections to all aspects of well-being compared with parents of passive travelers. In the second step, age was only related to community well-being, where parents of older children reported slightly lower levels of community well-being. In addition to travel mode, 3 variables emerged as significantly related to all dimensions of well-being. Parents of active travelers and parents who felt that the neighborhood was safe perceived the strongest connections to well-being. Parents who experienced positive emotions and parents of children who experienced positive emotions were most likely to recognize well-being connections. Distance to school was negatively related to the 2 individual dimensions of well-being: physical and emotional, where parents who lived further from the school reported weaker connections to their child's well-being. Perceiving that there were no major barriers to walk to school

Table 4. **Emotional Perceptions and Dimensions of Well-Being on the Trip to School by Travel Mode (N = 5423)**

	Child Travels Using Passive Modes % or M (SD)	Child Travels Using Active Modes % or M (SD)	Chi-Square or t-Test
Parent emotion on the trip to school			
Positive	55.1	73.6	$X^2 = 126.39$, df = 1, p < .001
Negative	44.9	26.4	
Child emotion on the trip to school			
Positive	62.8	68.4	$X^2 = 17.44$, df = 1, p < .001
Negative	37.2	31.6	
Travel mode to school and dimensions of well-being			
Physical well-being	2.47 (0.91)	3.64 (0.53)	$t = -53.25$, p < .001
Emotional well-being	2.99 (0.73)	3.44 (0.58)	$t = -23.83$, p < .001
Community well-being	2.73 (0.77)	3.45 (0.59)	$t = -36.49$, p < .001
Environmental well-being	2.52 (0.90)	3.60 (0.56)	$t = -48.61$, p < .001

M, mean; SD, standard deviation.
Parent emotion on the trip to school only included parents who accompanied their child to school (eg, did not include parents of children who traveled alone or by school bus). For the 4 dimensions of well-being, the mean (standard deviation) is given, and a t-test was performed.

was positively related to the 2 individual dimensions of well-being (physical and emotional) and also community well-being. Finally, parents who did not accompany their child to school reported stronger connections between their child's travel mode and multiple dimensions of well-being compared with parents that accompanied their child and experienced negative emotions.

DISCUSSION

To our knowledge this is the first study to explore emotions, well-being, and school travel in a large sample of parents and children. Results show that there are self-reported emotional benefits associated with AST for both the parent and child. Specifically, parents and children who walk or cycle report a significantly greater proportion of positive emotions like feeling happy, excited, or relaxed compared with those who use passive, motorized transport. On the other hand, children and parents who travel by car and other forms of passive travel are significantly more likely to experience negative emotions like feeling rushed or tired. Results also suggest that children's emotions are less affected by their travel mode compared with their parents, as greater than 60% of both active and passive travelers report positive emotional experiences on the trip to school. Whereas this study did not examine factors that led to positive or negative emotions by travel mode, previous work has suggested that children experience positive emotions when accompanied by a parent because of the opportunity to interact with them.[20] The small but significantly higher reports of positive emotions among active travelers could also result from the added opportunity to interact with the environment. In a qualitative study, Fusco et al[16] found that children who walked to school had greater opportunities for reflection during the school trip and opportunities for social interactions, and there was more time for the ''environment'' to cognitively register with children. Other research suggests that enhanced positive emotions among active versus passive travelers may in turn promote resilience to potentially stressful academic situations.[21] Using a simulated walk or drive to school, a study showed that active commuting among children decreased perceived stress and cardiovascular reactivity (eg, systolic blood pressure, heart rate) to a simple cognitive test.[21] Authors focused on the physical health benefits of walking to explain their findings; however, this study suggests the additional possibility that the positive emotional experience of walking may be partially responsible for the dampened cardiovascular reactivity of walkers. It could be that feeling relaxed, happy, or excited offers a protective effect against stressful academic situations, and contributes to a healthy learning environment.

Conversely, when children are passengers in a car, the morning commute may be a tiring or rushed experience if their parents feel stressed or frustrated with other drivers and traffic on the road or around school zones.[22,23] Research from New Zealand shows that there are proportionally more vehicle accidents on the morning commute because of the combined car travel to schools and workplaces.[24] Moreover, the morning commute may be a particularly negative emotional experience for those parents who are pressed for time and trip-chain.[25] This may explain why parents who use passive travel to school report the highest proportion of negative emotions across the sample (44.0%).

Table 5. **Relationships Between Explanatory Variables and Perceived Benefits of Travel Mode to School on the 4 Dimensions of Well-Being (N = 5423)**

	Physical Well-Being†			Emotional Well-Being‡			Community Well-Being§			Environmental Well-Being‖		
Independent Variable	**b**	***β***	**p**	**b**	***β***	**p**	**b**	***β***	**p**	**b**	***β***	**p**
Step 1												
Active travel (referent: passive)	1.17	0.51	.00**	0.45	0.31	.00**	0.72	0.44	.00**	1.07	0.55	.00**
Step 2												
Active travel (referent: passive)	1.01	0.51	.00**	0.37	0.25	.00**	0.62	0.38	.00**	0.96	0.49	.00**
Age	0.01	0.02	.10	−0.00	−0.01	.55	−0.01	−0.03	.02*	−0.00	−0.01	.66
Sex (referent: male)	−0.01	−0.01	.54	−0.02	−0.01	.42	−0.00	−0.00	.84	−0.02	−0.01	.31
Distance to school	−0.06	−0.06	.00**	−0.01	−0.02	.32	−0.02	−0.02	.15	−0.03	−0.03	.06
No major barriers	0.05	0.05	.00**	0.03	0.03	.04*	0.03	0.04	.02*	0.02	0.02	.13
Neighborhood is safe	0.08	0.07	.00**	0.04	0.04	.01*	0.09	0.09	.00**	0.08	0.07	.00**
Parent emotion (referent: negative)												
Positive	0.14	0.07	.00**	0.21	0.15	.00**	0.17	0.11	.00**	0.18	0.09	.00**
Child not accompanied	0.05	0.02	.09	0.21	0.14	.00**	0.22	0.13	.00**	0.30	0.15	.00**
Child positive emotion (referent: negative)	0.09	0.04	.00**	0.15	0.10	.00**	0.10	0.06	.00**	0.09	0.04	.00**

b, unstandardized coefficient; p, significance; β, standardized coefficient.
*$p < .05$; **$p < .01$.
†Step 1: $r^2 = .34$; $F(1, 5421) = 2835.42$, $p < .001$; step 2: $\Delta r^2 = .02$, $F(8, 5413) = 25.08$, $p < .001$.
‡Step 1: $r^2 = .10$; $F(1, 5421) = 567.91$, $p < .001$; step 2: $\Delta r^2 = .04$, $F(8, 5413) = 28.84$, $p < .001$.
§Step 1: $r^2 = .20$; $F(1, 5421) = 1331.22$, $p < .001$; step 2: $\Delta r^2 = .03$, $F(8, 5413) = 29.74$, $p < .001$.
‖Step 1: $r^2 = .30$; $F(1, 5421) = 2362.49$, $p < .001$; step 2: $\Delta r^2 = .03$, $F(8, 5413) = 25.85$, $p < .001$.

Findings show that parents who walk or cycle with their child or allow their child to actively travel on their own are acutely aware of the potentially positive impacts that this action has on multiple dimensions of their child's well-being. Importantly, parents of active travelers report significantly higher connections to well-being versus passive travelers. Parental awareness of the interdependence of travel mode and well-being, and greater positive emotions reported among active travelers provides initial empirical support that sustainable happiness is experienced through AST.[17] Additional research should examine whether switching from passive to active travel to school enhances positive emotions, and whether positive emotions reinforce other active travel behaviors to locations beyond schools.

The final hierarchical regression reveals that active travel is the strongest correlate of parents' perceptions of their child's well-being, the well-being of their community, and the well-being of the environment. Two other factors significant across all dimensions of well-being were parent positive emotions and child positive emotions, both in reference to negative emotions by the parent or child, respectively. It is possible that recognizing well-being benefits of their child's school journey prompts parents to recall the school trip as a positive emotional experience. It is also possible that simply reflecting on their positive emotions primes parents to perceive stronger connections to their child's well-being. Applying Fredrickson's ''broaden and build'' theory, positive emotions may broaden parents' attentional focus and cognitive abilities and help them to recognize diverse well-being benefits for their child.[26,27] Independent of travel mode, perceptions of neighborhood safety was significantly related to 4 dimensions of well-being. This aligns with the current literature demonstrating links between specific neighborhood conditions and psychological well-being in children[28] and adults.[29] STP initiatives are presently focused on the environment surrounding the school,[15] but could serve a broader function in mobilizing capacity and community engagement to tackle broader neighborhood safety concerns.

Notably, parents who did not accompany their child to school saw stronger connections to their child's emotional, community, and environmental well-being when compared with parents who accompanied their child but experienced negative emotions. The perspectives of these former parents are not without empirical support. There is growing interest in making the distinction between travel mode (active or passive) and travel independence.[30] Independent mobility has been found to foster higher acquisition, processing, and structuring of environmental knowledge,[31] encourage greater socialization with peers, and helps the development of emotional bonds between children and the natural environment.[32] With respect to those parents who accompanied their child and experienced negative emotions, future research and STP programs may explore strategies to promote positive emotional experiences on the school trip, like guessing games, particularly for those who live considerable distances from school and do not have the option to choose AST. Additionally, future research may examine emotions and school travel at the level of schools. If data show that a large proportion of families report negative emotions, this could signal the need for STP to identify,

and potentially address, common factors contributing to a negative emotional experience,[33] like unsafe neighborhoods,[34] excessive noise, or bullying.[35]

Limitations

Although families across Canada participated in this study, the sample largely reflected provinces that were involved in the STP pilot.[15] Survey data were self-reported and potentially impacted by social desirability. Parents also may have influenced their child's response to emotions on the trip to school. However, all surveys were completed in private and at home, and participation was voluntary. This study used a cross-sectional design; thus, it was not possible to infer causal relationships between the variables of interest. For example, it was not possible to determine whether parents experienced positive emotions because they actively traveled with their child, or whether they used active travel because of positive emotions. In addition, due to the study design, it was not possible to examine whether parental positive emotions or the use of active travel was responsible for children experiencing positive emotions for the school journey. It could be that children of parents who enjoy driving to school experience equally positive emotions as children of parents who enjoy using active travel to school. Finally, empirical study of the concept of sustainable happiness to school travel is relatively new and our findings offer a novel contribution to the literature. Further inquiry into this concept for fostering AST is warranted, but this should be refined by a conceptually driven approach to measurement development and testing.

Conclusions

Given the range of health and well-being benefits of AST shown in this study, integrating active transportation into curriculum outcomes should be considered as an element of positive school health.[36] STP programs should raise awareness of the positive emotional experiences for children and their parents as a health benefit of AST. Future research should experimentally examine if AST causes these emotional benefits. Whether such benefits are linked to educational outcomes of particular interest to schools also should be considered.

IMPLICATIONS FOR SCHOOL HEALTH

Findings related to positive emotions and well-being with AST provide further justification for why schools should be interested in how their students get to school and why they should engage in Safe Routes to School programs. Schools may identify families who live within a short distance of the school and examine whether there are issues related to neighborhood safety or barriers that must be addressed before active travel may be promoted. As schools are commuting hubs for young families and often centrally located in communities, focusing on wellness benefits of active travel in school curricula and initiatives may in turn play an important supporting role in health promoting schools by involving parents and stimulating changes to the school environment,[37] and also broader public health initiatives to address positive mental health.

Human Subjects Approval Statement

This study was approved by the Research Ethics Board at Cape Breton University and by school board ethics committees as required.

Disclaimer

The views expressed herein represent the views of the Children's Mobility, Health and Happiness: A Canadian School Travel Planning Model and do not necessarily represent the views of the project funders.

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