

Active Transportation to School: attitudes and appraisal

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Abstract

Introduction: Only recently have we come to understand that physically inactive lifestyles are one of the major public health challenges of our time. The increase in sedentary behaviour (physical inactivity) over the last number of decades is thought to be one of the main risk factors for the development of diabetes, obesity, cardiovascular disease, osteoporosis and psychosocial constraints (Anderson, Crespo, Barlett, Cheskin, & Pratt, 1998). The possibility that the commute school can play a role in increasing physical activity and reducing obesity among children has received attention recently (Appleyard, 2002; Tudor-Locke, Ainsworth & Popkin, 2001; U.S Department of Transport, 2004). However, there is a substantial deficit of research regarding barriers to and facilitators of active to school in Ireland including a lack of exploration of the attitudes of parents, pupils and teachers to active transportation to school. To date there have only been two pilot projects initiated in urban areas with large populations. No study has been published in a peer-reviewed journal. In addition, there have been no research-based interventions to encourage active to school.

Methodology: This research involved both quantitative and qualitative data collection centred on the development and implementation of a School Travel Plan. Data regarding the attitudes and changes in attitudes of pupils, teachers and parents towards walking and cycling to school was collected at baseline, impact and outcome evaluation stage.

Results: The overall results indicate that pupils, teachers and parents understand the many benefits of walking/cycling to school. The barriers and facilitators to active to school reported in literature were also reported in this research. The main barrier to active to school identified by pupils concerned issues over body image. Parents' greatest barriers to active to school included the safety of pupils and a lack of infrastructure conducive to walking/cycling.

Conclusion: The overall conclusion of this study is that while the benefits of active transport to school are widely recognised, pupils, parents and teachers expressed many barriers and concerns regarding children walking/cycling to school. Body image was a major concern and barrier to walking/cycling to school. Furthermore, a

lack of infrastructure, personal safety and danger from traffic is a major concern for both parents and teachers. However, it appears that infrastructural barriers could be considered perceived as opposed to actual barriers as they were overcome without being changed: more active modes of travel to school were observed and reported without any improvements to or addition of footpaths, crossings or cycle lanes. For example the perceptions of personal safety and the apparent lack of infrastructure when investigated further through a walkability analysis did not represent an actual barrier to active to school. Furthermore, changes in travel modes in favour of walking were witnessed even though there was no change made to infrastructure in the area.

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I would like to thank all those who made this possible. To list some would only serve to insult others.

“At times our own light goes out and is rekindled by a spark from another person. Each of us has cause to think with deep gratitude of those who have lighted the flame within us”.

Albert Schweitzer

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REVIEW OF LITERATURE

Introduction

Only recently have we come to understand that physically inactive lifestyles are one of the major public health challenges of our time. The epidemiological evidence linking physical inactivity with numerous health problems emerged mainly in the late 1970's and 1980's. The increase in sedentary behaviour (physical inactivity) over the last number of decades is thought to be one of the main risk factors for the development of diabetes, obesity, cardiovascular disease, osteoporosis and psychosocial constraints (Anderson et al., 1998).

Inactive lifestyles are responsible for about 200,000 deaths in the US each year and more than 70% of Americans do not meet physical activity recommendations (US Department of Health and Human Services USDHHS, 1996). Furthermore, Fahey, Layte and Gannon (2004) found that in Ireland 20% of adults take no leisure physical activity and only 40% take enough leisure exercise to meet the minimum standards of physical activity recommended by the World Health Organisation (WHO).

In light of these findings, Morris and Hardman (1997) suggest that for the habitually sedentary walking may serve as an ideal form of physical activity to initiate the required behaviour change for health benefit. Morris et al. (1997) further identifies walking as a familiar weight-bearing activity, and the only sustained dynamic aerobic exercise that is common to everyone except the severely disabled or the very frail. Unlike other forms of activity, walking is a year round, readily repeatable, self-reinforcing, habit-forming activity and may be seen as the main option for increasing physical activity in sedentary populations (Morris et al., 1997).

However, attitudes are important determinants of behaviour that affect our decisions to exercise or be physically active Ajzen (1991), and should be seen to affect our decisions about whether or not to walk or cycle instead of driving or being driven.

Active Transport

One of the main problems facing practitioners wishing to promote "active living" and walking for health benefit is that there has been a gradual decline since the 1970's in walking in urban areas for everyday purposes and during the same period a large increase in car journeys. In the UK the average number of journeys made on

foot per person per annum has gradually been decreasing since the 1970's and fell by 12% over the period 1985/1986 to 1993/1995. Furthermore, people are walking shorter distances, and hence the mileage walked per annum has declined by 18% during the same period (Lumsdon & Mitchell, 1999).

Additionally, Crampin (1996) estimated that the average amount of walking per person per day is now only 0.5 mile, and that longer walking trips, many of which were previously walking journeys to work, are declining faster than shorter trips. Hine (1996) suggests that potential walkers are deterred by heavy traffic, excessive speed or lack of crossing opportunities. The conditions of the pavement, dog fouling and litter also combine to make walking less attractive (General Consumer Council, 1995; General Consumer Council for Northern Ireland, 1997). In addition, the General Consumer Council et al. (1995) and the Dublin Transport Office (DTO)(2005) identify safety, convenience, distance and time to be associated with a lack of active living in Ireland today.

A major, but less tangible barrier to physical activity is the "car dependent" lifestyle adopted by many in developed societies. The term "car dependency" refers to the pervasiveness of the car in society (Transport Studies Unit, 1995). It is considered to be so widespread that it is a major barrier to increasing walking levels within communities (Lumsdon et al., 1999). In the face of these powerful societal inducements to be inactive, efforts are needed to encourage walking as part of usual daily activity, and create environments that afford the maximum opportunity to be active (Lumsdon et al., 1999). As previously stated, walking, in contrast to many forms of physical activity, does not need specialised equipment, but it does require a safe environment in terms of social and physical safety. Securing the availability and facilities conducive to walking is also central to ensuring that the population, or at least segments of the population, can act upon individual behavioural intentions to be active (Lumsdon et al., 1999).

Inactive lifestyles are not only associated with adulthood. Considerable evidence documents that nearly 35% of youth in the United States fail to meet the minimum physical activity guidelines, and another 14% are completely inactive (Centers for Disease Control & Prevention, 1997; US Department of Health & Human Services, 2000). Furthermore, SLAN (2003) found that in Ireland 48% of children report

exercising four or more times per week while 12% exercise less than weekly. The research further suggests that exercising four or more times per week decreases with age from 59% of 10-11 year olds and 53% of 12-14 year olds to 35% of 15-17 year olds. The study concludes that this decrease is apparent between both genders but is particularly noticeable among girls (SLAN, 2003).

In the past decade a number of major international conferences and reports stressed the importance of focusing on children and adolescents and establishing infrastructure in schools and communities to promote healthy physical activity patterns (Stone, McKenzie, Welk & Booth, 1998). In particular, the possibility that actively commuting to school can play a role in increasing physical activity and reducing obesity among children has received much attention recently (Appleyard, 2002; Tudor-Locke, Ainsworth & Popkin, 2001; U.S Department of Transport, 2004). Students attend school five days per week, providing an opportunity for the accumulation of health-promoting levels of activity if active modes are chosen (Koplan, Liverman & Kraak, 2004). In addition, research has found that children who actively commute to school engage in more total physical activity than those who travel by other means (Cooper, Page, Foster & Qahwaji, 2003; Tudor-Locke, Ainsworth, Adair & Popkin, 2003).

Active transportation may be described as any form of human-powered transportation. It is any trip made for the purposes of getting yourself, or others, to a particular destination (Public Health Agency of Canada, 2002). Furthermore, active transportation to school is any form of active transport a child uses to get himself/herself to school. The most common methods of active transportation are walking and cycling. However, as mentioned previously active transportation and active to school have declined rapidly in the last number of years this is matched with a rapid increase in car usage for the majority of journeys undertaken. In a recent document by the WHO (2002) it was stated that more than 30% of trips made in cars in Europe cover distances of less than 3 km and 50% less than 5 km.

The Built Environment

However, for those wishing to promote active transportation and active to school the built environment represents a significant barrier. The environments that people build and inhabit provide potential opportunities and barriers to engaging in

physically active lifestyles (Jackson & Kochitizky, 2003; Frank & Engelke, 2003). Furthermore, evidence suggests that the probability of being over-weight is linked to the built environment in which one lives. The built environment may be considered as a multi-dimensional concept. Factors may be objective, physical in nature or they may be subjective, perceptive or visual in nature. These factors influence the choice to use motorised or non-motorised transport and are based primarily on two fundamental aspects of the way land is used (a) proximity (distance) and (b) connectivity (directness of travel) (Frank, 2000). Factors such as travel costs, environmental quality, aspects of convenience and access to parking are also likely to be influential (Saelens, Sallis & Frank, 2003). To determine if communities are “pedestrian-orientated” planners often make an analysis of objective qualities such as densities of development, connectivity, and mix of land uses, and subjective qualities such as scale of streets, and aesthetic qualities (Handy Boarnet, Ewing & Killingsworth, 2002).

Objective Attributes

Density is described as a measure of the amount of activity found in an area. It is usually defined as population, employment or building square footage per unit of area and may be measured as people per acre or jobs per square mile. Population density is among the most consistent positive correlates of walking trips (Ross & Dunning, 1995; Cervero, 1996). Research by Ross et al. (1995) suggest that travel by walking and cycling was approximately five times higher in highest versus lowest density areas. In addition, Frank and Pivo (1994) found that population and employment density were independent positive correlates of walking rates for community and shopping purposes, after accounting for such factors as vehicle ownership, residents’ age and drivers licence status.

Land use mix may be defined as the relative proximity of different land uses within a given area (Saelens et al., 2003). A mixed-use neighbourhood would include not just homes but also shops, offices, parks and other land uses. Land use mix, especially the close proximity of shopping, work and other non-residential land use to housing, appears related to greater walking and cycling among residents. However, in modern suburbs, different land uses are purposefully separated, so it may be practically impossible to walk from one’s home to the nearest shopping centre or place of employment (Saelens et al., 2003). Furthermore, Knockelman (1997) Hanson and

Schwab (1987) found that closer proximity or accessibility of jobs and services is associated with more walking and cycling.

Connectivity is defined as the directness and availability of alternative routes from one point to another within a street network and can be measured by the number of intersections per square mile (Handy, 1996). Connectivity characterises the ease of moving between origins and destinations within the existing streets and pathway structures. Connectivity is high when streets are laid out in a grid pattern and there are few barriers to direct travel between origins and destinations. Interestingly, low connectivity is found in the layout of modern suburbs and is characterised by low-density intersections, barriers to route travel and few route choices (Saelens et al., 2003).

Subjective Attributes

Aesthetic qualities are those that contribute to the attractiveness or appeal of a place. These are the most intangible of the other dimensions and are more often described than measured. Factors include the design of buildings, the size and orientation of windows, the location of the door relative to the street, decoration and ornamentation, landscaping, particularly trees and the shade they provide, and the availability of public amenities such as benches and lighting (Handy et al., 2002). Places with desirable aesthetic qualities are often said to have a strong “sense of place”, a clear identity (Lynch, 1981). Some empirical evidence presented by Cervero and Kockelman (1997) found that pedestrian infrastructure including sidewalks and street lighting, was related to greater non-automobile travel, particularly for non-work trips originating from home although they did not specifically examine walking/biking rates in their study (Saelens et al., 2003). However, there is a substantial deficit of literature regarding subjective attributes of communities and their impact on the attitudes of residents to walking and cycling in their neighbourhood.

The Built Environment and Over-weight

Ewing, Schmid, Killingsworth, Zlot & Raudenbush (2003) found that the probability of being overweight or obese, and to a lesser extent, being physically active, is significantly associated with the overall urban form of the county in which a person lives. Furthermore, Frank, Andresen & Schmid (2004) conclude that land use mix,

time, and distance walked were significantly associated with obesity when adjusting for age, income, and educational attainment for all gender/ethnicity classifications.

One recent study found significantly higher physical activity levels and lower obesity in more walkable environments (Saelens, Sallis Black & Chen, 2003). Saelens et al. (2003) estimated that the mean difference between high and low-walkable neighbourhoods of approximately one to two trips per week translates into 1-2 km or about 15-30 min more walking for each resident of high-walkable neighbourhoods. Across one year, for a 150lb person, this translates into energy expenditure of approximately 3,000-6,000 kcal (Saelens et al., 2003). This research by Saelens et al. (2003) demonstrates that using active forms of transport has the possibility to reverse the epidemic of overweight and obesity.

The Built Environment and Children

A number of reviews have examined links between the physical environment and adults' physical activity. Much less emphasis has been placed on research specific to children. One cannot assume that associations between the physical environment and physical activity among adults are applicable to children. Children in contrast to adults, spend large parts of their day at school, have considerable time for recreation, are more likely to accumulate physical activity through play, are not able to drive, and are subject to restrictions placed on them by adults (Krahtovever Davinson & Lawson, 2006). It is important to note that the built environment does not only affect an adults transportation choice but has also an impact on that of children and adolescents. From a cross-sectional study of 235 children aged between 5 and 6 years and 677 children aged between 10 and 12 years from 19 elementary schools in Melbourne Australia, Timperio Ball, Salmon, Roberts, Giles-Corti, Simmons, Baur and Crawford (2006) conclude that aspects of the social and physical neighbourhood environment may influence children walking and cycling to school. They suggest that the consistency of findings across both age groups confirms the importance of these issues and may be important strategies for increasing active transportation to school (Timperio et al., 2006).

However, there has been some research carried out regarding childrens' attitudes towards AT and the built environment. Sallis, Conway, Prochaska, McKenzie, Marshall and Brown (2001) suggest that school environments, which promote

physical activity, were positively associated with childrens' activity levels. In a large study of elementary school students' aged 5–18 in Florida, Ewing, Schroerer and Greene (2004) found that students were more likely to walk to school if there was higher sidewalk coverage around their school and home. Furthermore, Fulton, Shisler, Yore and Caspersen (2005) examined parental report of footpaths and cycle paths and found that the presence of these features were associated with increased levels of active travel. In addition, Fulton et al. (2005) found that youth whose parents reported having footpaths on most of the streets in their neighbourhood were over four times more likely to report normally walking or cycling to school. Despite this, Evenson, Birnbaum, Bedimo-Rung, Sallis, Voorhees, Ring and Elder (2006) found no association between active commuting and adolescent girls' own perceptions of a presence of sidewalks on most streets in the neighbourhood. In general these findings in current literature support the theory that the characteristics of the built environment within a community have major influences on walking and cycling for transport and general physical activity for both adults and children.

Active Transportation to School (ATS)

The journey to school is a potentially important opportunity for establishing daily physical activity. However, more children than ever before are being driven to school. Results from a survey by the US Centres for Disease Control and Prevention (2002) found that walking and cycling made up only 14% of U.S school trips. In the United Kingdom, the proportion of children younger than age 16 years travelling to school by car increased from 16% to 30% between 1985/1986 to 1997/1998 and 38% of primary-school children (aged 5-10 years) are now taken to school by car (Cooper et al., 2003). In 1991, 24% of Irish school pupils were driven to school, by 1996 this had increased to 30%, reaching 42% by 2002 (DTO, 2005). Over the same period of time the numbers cycling and walking to school dropped by 17% (DTO, 2005). In 2002, the commute to school accounted for over 20% of the total number of cars on the road in the Greater Dublin Area during the morning peak period (DTO, 2005).

The consequences of such high car dependency for school travel in Ireland are widespread. Traffic congestion is the most obvious. However, there are also negative health, safety, environmental, and social impacts to consider. One in five Irish children is overweight due to poor diets and lack of regular exercise (SLAN, 2003). Emissions from road traffic are the primary threat to the quality of air in

Ireland (EPA, 2004). Passengers in slow moving traffic, especially children, are exposed to pollution levels two to three times higher than pedestrians (Environment Transport Association Trust, 1997). Increased traffic and traffic congestion has contributed to more road related accidents. Furthermore, the growth in car use to and from school has led to social exclusion and reduced community relations among parents and children.

Further research around the globe is consistent with US, UK and Irish findings. Seaton and Wall (2001) and Carlin, Stephenson, Roberts, Bennett, Gelman and Nolan (1997) demonstrated that fewer Australian children are now walking to school than ever before. In 1999, 26% of primary school-aged children in Perth, Australia, walked to or from school, including only 42% of those who lived within a ten-minute walk from school.

Another Australian study conducted in 1999 found 81% of all trips made by children aged 5-9 years and 62% of those made by children aged 10-14 years were by car (Morris, Wang & Lilja, 2001). Furthermore, an international study of 6-9 year old childrens' mode of travel found that Australian children had lower levels of walking and cycling than children in Canada and Sweden, with Australian children relying more heavily on car travel (Roberts, Carlin, Bennett, Bergstrom, Guyer and Nolan, 1997). Interestingly, Sallis, Nader, and Broyles (1993) estimated that physical activity declines over the school age years at about 2.7% yearly for males and 7.4% per year for females.

Benefits of ATS

ATS has many benefits for children and adolescents. Cooper et al. (2003) investigated differences in the pattern of physical activity between children who walk or those who are driven to school. In the UK of the 114 children who took part in the study, those who walked to school were significantly more active than those who travelled by car. Results demonstrated that boys who walked to school were more active after school and throughout the evening than were car users. This was not the case for girls (Cooper et al., 2003).

Additionally, four classes, each of about thirty pupils aged 13-14 years, from four schools in the Edinburgh area were studied regarding their levels of walking and

cycling to school. The study found that walking to school was associated with higher overall moderate to vigorous physical activity throughout the day compared with travelling by car, bus, or train. Reasons suggested for increased physical activity (not investigated) may include differences in appreciation of activity and walking in the morning may stimulate further activity and social facilitation (Alexander, Inchley, Todd, Currie, Cooper & Currie, 2005).

An analysis of 154 boys and 121 girls in their first year at 53 urban primary schools, illustrated that children who walked to and from school recorded more activity in the process however, the difference had no impact on the total weekly activity level (Metcalf, Voss, Jeffery, Perkins & Wilkin, 2004). Noteworthy in this context are the comments made by Tudor-Locke et al. (2001) who propose that despite the enthusiasm for such approaches, there is little evidence for the magnitude of the contribution that active commuting to school might make to children's overall physical activity.

Furthermore, a longitudinal study by Metcalf, Voss, Jeffery, Perkins and Wilkin (2004) suggest that although children who walk to and from school record more activity in the process, the difference has no impact on their total weekly activity. The additional activity recorded by walkers during the school journey was only 2% of the children's total weekly activity (Metcalf et al., 2004). Those driven by car matched those who walked to school in overall activity levels. Another study to have considered the impact of walking to school on physical activity in children reported that boys (though not girls) who walk to school are more active after school (Cooper, Page, Foster, Qahwaji, 2003). However, measurement of after school activity included the walk home, making the analysis difficult to interpret. Girls who walked recorded no more physical activity in so doing than those who were driven. Metcalf et al (2004) suggests that whether children walk to and from primary school makes no difference to their total activity and concludes that while there may be other benefits from walking children to their neighbourhood school, but physical activity does not appear to be one of them.

ATS has also been linked with lower skinfold measurements in children and adolescents. In a study of 1083 4th grade students and 924 5th grade students using accelerometers Rosenberg, Sallis, Conway, Cain and McKenzies (2006) conclude

that boys who actively commuted to school had lower skinfold and BMI measurements than non-active commuters to school. In addition, Gorden-Larsen, Nelson, and Beam (2005) reported in a study of adolescents, that active commuters to work or school were more likely to be of normal weight. In contrast, a study by Fulton, Shisler, Yore and Caspersen (2005) found no relationship between body mass index of children in grades 4-12 and ATS. Furthermore, the findings of one prospective study were the opposite of those expected, showing a positive association between commuting to and from school and increased BMI among overweight children (Heelan, Donnelly, Jacobsen, Mayo, Walshburn & Greene, 2005). Additionally, Rosenberg et al. (2006) reported that there appeared to be no health benefits of using active modes of transportation to school consistently over two years for both boys and girls.

A further benefit associated with ATS is identified by Zahner, Puder, Roth, Marco, Guldimann, Puhse, Knopfli, Braun-Fahrlander, Marti, Bernard & Kriemler (2006) who propose that physical activity has a positive effect on the psychology of children and adolescents. In a study by Klein-Hessling (1997) it is reported that 50% or more of US elementary school children report being stressed or exhausted and not able to sleep well. Klein-Hessling (1997) Rothlisberger, Calmonte & Seiler (1997) suggest that regular physical activity can increase the ability to cope with stress and can lead to an improved health perception and quality of life. Furthermore, physical activity does not only act on an individual level but influences the school climate positively by increasing social competence within classes. This leads to improved social behaviour and more satisfaction with school as rated by both pupils and teachers (Prohk & Moser, 1996).

Determinants of ATS

ATS raises common concerns for both parents and children. Collins & Kearns (2001) state common reasons given by parents of primary school children for their child not walking to school which include a long walking distance, traffic, safety and fear of crime. Collins et al. (2001) further suggests that the safety of child pedestrians in many Western cities is increasingly threatened by intensifying traffic. Dixey (1998) reported that in 1971 80% of English seven and eight year olds made the journey to school unaccompanied, a follow up study in 1990 discovered that this figure had fallen to 9%. Dixey (1998) contends that increasing traffic volumes

account for much of this trend, as parents are fearful for their childrens' safety on the roads and have imposed more vigorous restrictions on activities such as bike-riding, walking and street play.

Wen, Fry, Rissel, Dirkis, Balafas and Mermom (2007) also examined factors associated with children being driven to school. Participants were 1603 students (aged 9–11 years) and their parents from 24 public primary schools in inner western Sydney, Australia. Students recorded their modes of travel to and from school for 5 days in a student survey. Parents recorded their demographic data, their attitudes to travel, and their modes of travel to work, using a self-administered survey. An analysis of the two linked data sets found that 41% of students travelled by car to or from school for more than 5 trips per week. Almost 32% of students walked all the way. Only 1% of students cycled and 22% used more than one mode of travel. Of those who were driven, 29% lived less than 1 km and a further 18% lived between 1km and 1.5 km from school. Factors associated with car travel (after adjusting for other potential confounders) were mode of parents' travel to work, parent attitudes, number of cars in the household, and distance from home to school. Wen et al. (2007) conclude that effective walk to school programs' need to address the link between parent journey to work and student journey to school.

Furthermore, Dellinger (2002) reviewed 3550 households regarding barriers to children walking and cycling to school. Reported barriers to walking and cycling to school included long distances, traffic danger, adverse weather conditions, crime danger, opposing school policy, or other reasons. A total of 16% reported no barriers to their children walking or cycling to school. Of the 16% of respondents who reported no barriers, 64% reported children walking, and 21% reported children cycling to or from school at least once a week during the preceding month. Children with no barriers were six times more likely to walk or cycle to school than the rest of their peers aged 5-18 years with one or more barriers. A total of 66% of the children were primary school-aged (aged 5-11 years) and 34% were secondary school-aged (aged 12-18 years).

Numerous studies have found that children who report that their parents are worried about abduction/molestation or traffic danger and who do not allow them go out without an adult are more likely than others to be driven to school (Evenson, Huston,

McMillen, Bors & Ward, 2003). Furthermore, parental perceptions of the need to cross several roads to reach play areas, and the lack of traffic lights or crossings are negatively associated with children regularly walking or cycling to school (Timperio., 2004).

Timperio et al. (2003) concluded that five to six year old Australian boys whose parents believed there was heavy traffic in their area were 2.8 times more likely, and five to six year old girls whose parents owned more than one car were 70% less likely, and whose parents believed that public transport was limited in their area were 60% less likely than other children to walk or cycle at least three times per week. Among older girls, parent beliefs that their child needed to cross several roads to reach play areas and that there were no parks or sports grounds near the family home were associated with a lower likelihood of walking and cycling (Timperio et al., 2004).

In a study by Vanderbeck & Johnson (2000) children rendered safe play and independent mobility all but impossible, as congestion, the absence of bicycle routes, and a shortage of play spaces were compounded by an intense fear of crime. Accordingly, children generally agreed with parents that their leisure time was best spent indoors (either at home or in the shopping centre) and that adults should accompany them on most journeys (Vanderbeck et al., 2000). In addition safety of the neighbourhood including traffic speed and density, along with “stranger danger” concerns have also been suggested as potential limitations to children’s independent mobility, particularly affecting the school journey (Hillman, 1999; Tudor-Locke et al., 2001).

Attitudes towards Physical Activity and ATS

Important when considering attitudes towards physical activity and ATS are social cognition models particularly those that contain attitudes as a key social-cognitive determinant of behaviour. Social cognition models examine factors that predict behaviour and/or behavioural intentions and in addition examine why individuals fail to maintain a behaviour to which they are committed (Ogden, 2000). Social cognition theory suggests that behaviour is governed by two beliefs, incentives and social cognitions (Ogden, 2000). These beliefs include: situation outcome beliefs, which are the expectancy that behaviour may be dangerous (e.g. inactivity can cause

obesity). Outcome beliefs which are the expectancy that a behaviour can reduce the harm to health (e.g. being active can reduce risk of obesity). Self-efficacy beliefs are the belief that the individual is capable of carrying out the desired behaviour (e.g. 'I can be active if I want to') (Ogden, 2000).

The theory of planned behaviour (TPB) is a popular, well-established model of decision-making about health-related behaviour in which attitudes and information of social norms are key factors (Ogden, 2000). The TPB proposes that behavioural intentions are the outcome of a combination of several beliefs. 1) Attitudes towards the behaviour, which comprise either positive or negative evaluations of a particular behaviour and beliefs about the outcome of the behaviour; 2) Subjective norms which comprise the perception of social norms and pressure to perform a behaviour and an evaluation of whether the individual is motivated to comply with this pressure; 3) Perceived behavioural control, which is the belief that the individual can carry out a particular behaviour based upon a consideration of internal control factors and ability, both of which relate to past behaviour. However, critics suggest that the TPB does not describe either the order of the different beliefs or any direction of causality (Ogden, 2000).

Overall, the social cognition approach to understanding behaviours and lifestyle has been severely criticised mainly because the models have not been very successful at either predicting behaviour or changing it. These models have been criticised for being far too simplistic. A fundamental problem of the social cognition models is their portrayal of a human being as rational. Numerous studies show that people have sensible and non-rational reasons for engaging in behaviours. And finally, Oden (2000) questions whether the cognitive factors and states in these models really exist or are they simply created by the social cognitive theorists.

As mentioned previously attitudes are important determinants of behaviour that affect our decisions to exercise or be physically active Ajzen (1991), and should be seen to affect our decisions about whether or not to walk or cycle instead of driving or being driven. Attitudes may be described as responses, evaluative in nature and directed at a given object or target (a person, institution, policy or event) (Ajzen, 2005). Ajzen (1991) suggests that intentions to perform behaviours of different kinds can be predicted with high accuracy from attitudes toward the behavior,

subjective norms, and perceived behavioral control. These intentions account for considerable variance in actual behaviour in this case AT and ATS.

The Scottish Executive (2002) examined parents of teenagers, middle-aged men and parents of pre-five year old children. They found that the attitudes and behaviour of teenage girls and men in their mid-years were strongly affected by their understanding of physical activity. In their research physical activity was perceived as competitive, physically demanding and time consuming. As such both middle-aged men and teenagers felt unable and/or unwilling to get involved. Furthermore, teenage girls felt self-conscious about their perceived inability to participate 'properly' in physical activity and expressed that they lack the necessary 'sporty' skill, ability and appearance. The Scottish Executive (2002) further suggests that the pressures of puberty contribute to their heightened sense of self-consciousness. Additionally, the research suggested sexual stereotypes that exist at a wider societal level also affect girl's lack of interest in physical activity (The Scottish Executive, 2002).

Research surrounding parental attitudes towards physical activity suggest that whilst all parents believe in the 'naturalness' of physical activity for pre-fives children, attitudes vary in respect of both supporting childrens' participation in physical activity and perceptions about the types of activities that are appropriate at various ages within the 0-5 year age range (The Scottish Executive, 2002). The Scottish Executive (2002) suggest that some parents take a deliberately more active role in facilitating opportunities for their children to get involved in physical activity, particularly as the child gets older, because they believe this will lead to positive benefits in later life, such as confidence, mental well being and social order. Other parents, whilst keen to provide the 'right' environment so that their child can get involved in physical activity, see little need for active involvement on the part of the parent, and are less likely to consider the future benefits of being involved in physical activity from an early age (The Scottish Executive, 2002).

Furthermore, Lorenc, Brunton, Oliver and Oakley (2008) examined the views of children, young people and parents about walking and cycling these included a culture of car dependency, safety fears, dislike of local environments and parental concerns that emphasised children's safety. Researchers Davison, Davison, Reed,

Halden & Dillon (2003) also made an analysis of young peoples attitudes towards active transport. Davison et al. (2003) suggest that children at primary school level were enthusiastic about walking and cycling and recognised the health and environmental benefits of walking and cycling for transportation. These ways of getting around were seen to provide personal freedom, independence and the ability to explore, as well as being fun (Davison et al., 2003).

Davison et al. (2003) further suggest that in almost all the schools surveyed, there was latent demand for making more specific journeys by bike, especially by boys. The benefits of the car were understood widely in terms of convenience, speed and comfort, however a negative view of the car was also expressed (Davison et al., 2003). The car was seen as a restrictive and boring mode of travel, and associated with factors such as pollution, congestion, parking and costs (Davison et al., 2003).

In addition, Davison et al. (2003) contend that for older children attitudes to walking were generally favourable, and they had a good understanding of health and environmental benefits. However, Davison et al. (2003) further suggests that children at secondary school identified many advantages in using cars, despite a very wide understanding of the negative effects of pollution and congestion. These views were held more strongly in urban and suburban areas (Davison et al., 2003). Furthermore, in rural areas, there was a sense that the car was a virtual necessity for making many journeys (Davison et al., 2003). Davison et al. (2003) suggest that nearly all pupils considered the car to play a key role in their future adult travel and being able to drive was a very widespread and relatively unquestioned desire. Davison et al. (2003) argue that for secondary school pupils, punctuality was the most important issue regarding ATS, with weather protection and exercise also important. The issue of walking/cycling being good for the environment was seen as relatively unimportant. Directness of journey was also expressed as least important. In addition, pupils and parents suggested that healthy exercise gained through active transport was of high importance. For parents “stranger danger” was ranked as the second most important issue in deciding how their child travelled to school, especially for girls (Davison et al., 2003). Overall, Davison et al. (2003) conclude that a deeper understanding of relevant issues was demonstrated in children participating in whole-school programmes such as Eco-Schools or Health Promoting

Schools. Interestingly, Davison et al. (2003) suggested that children reported receiving conflicting messages about transport. For many, the greatest influence on travel behaviour came from parents, and differing messages from parents and school were seen to cause conflict between what children's attitudes were and which behaviours were possible (Davison et al., 2003).

ATS Interventions

Recent methods used to promote ATS around the globe include walking buses, Walk on Wednesday/Walk Once a Week (WOW) days, park & stride, carpool program's and parking restrictions. The walking bus is a healthy, fun, safe and environmentally friendly way of travelling to school. Children walk together as a group along a set route and there is a 'driver' at the front of the bus and a 'conductor' at the rear. The walking bus is an ideal mode of transport for younger children who are not skilled enough to travel to school independently (Green Schools, 2009). In addition, "WOW" is a scheme that aims to promote walking to school on a regular basis. The idea behind the scheme is to dedicate one day a week to walking to school. Ideally schools promote walking to school every Wednesday. However if this is not suitable schools can choose any day of the week once it is on a regular basis (Green Schools, 2009).

Park & Stride schemes work in the same way as Park & Ride schemes work with public transport. Parents who usually drive their children to school, park away from the school gate and the children walk for the last part of the journey to school (Green Schools Travel, 2009). Car pool or car sharing is when two or more people travel together in one car. If one parent drives pupils to school one day another parent will drive the next day (Green Schools, 2009). Furthermore, parking restrictions or an "exclusion zone" around the school gates/grounds may be used to create a safe environment for ATS. Only cyclists and pedestrians can use the exclusion zone (Green Schools, 2009).

Interventions using such methods of ATS promotion are being implemented and evaluated around the globe to encourage walking and cycling to school. A study by the Safer Routes to School Programme (SRTS) in Marin County, California, USA worked to promote walking and cycling to school. The programme identified and

created SRTS and invited community wide involvement. By its second year, the program was serving 4,665 students in 15 schools. Schools reported an increase in school trips made by walking (64%), cycling (114%), and car-pooling (91%) and a decrease in trips by private vehicles carrying only one student (39%) (Staunton, Hubsmith, & Kallins, 2003).

Furthermore, Boarnet, Anderson, Day, McMillan & Alfonzo (2005) conducted a cross-sectional evaluation examining the relationship between urban form changes and walking and bicycle travel to school. Surveys were distributed to parents, 2 groups were created based on whether parents stated that their children would pass the SRTS project on the way to school or not. Results demonstrated that children who passed completed SRTS projects were more likely to show increases in walking or cycle travel than were children who would not pass by projects (15% vs. 4%), based on parent's responses. Boarnet et al. (2005) conclude that the construction of SRTS projects increased walking or cycling to school for children who would pass these projects on their way to school.

Importantly, Ussher (2005) reported that in isolation, one-off events do not appear to have a lasting impact on children's travel behaviour, as many families need constant reminders and encouragement to walk to school on a regular basis. Ussher (2005) recommends the introduction of a national walk to school promotion. The first of these involves a National Walk to School Day at the beginning of the new school year which is used to launch a regular Walking Wednesday programme that continues once a week/month for the remainder of the year. Similarly, the second option includes an initial week-long walk to school event to introduce children to the concept of walking before launching an ongoing Frequent Walkers incentive programme to encourage children to develop and maintain an everyday walking habit.

Interestingly, SRTS appear to increase ATS when implemented in a community, especially when children and adolescents pass SRTS on their way to school. It is also important to note that once-off events appear to have little affect on increasing ATS. As a result, interventions must be regular and habit forming to allow children and adolescent take these habits into adult life.

School Travel Plan (STP)

A School Travel Plan (STP) is typically used to encourage children to walk or cycle to school. It forms the basis from which to implement interventions such as park & stride. A STP is typically used to start an ATS programme. A STP may be described as a simple written document that identifies local issues relating to the school journey, sets out a strategy of agreed aims and identifies a package of measures designed to promote more sustainable travel choices for pupils, parents, staff and visitors to a school (SUSTRANS, 2004). Sustainable travel choices may include walking, cycling, public transport and lift sharing. Furthermore, a STP is a working document that needs to be monitored and reviewed regularly. It also enables pupils to gain a better understanding of the health, environmental and social benefits of walking/cycling and the use of public transport, resulting in the formation of active travel habits that can be carried through into adult life. A school can use its STP to demonstrate a clear and real commitment to the promotion of health, environmental and community issues (SUSTRANS, 2004).

The success of a STP depends on the engagement of the whole community in its development (SUSTRANS, 2004). Core members may include a school staff member or local champion, interested pupils, parents with a particular interest or knowledge about travel issues, and local authority. As the STP plan develops other community stakeholders may become involved for example, local media, businesses, councilors and cycle clubs (The Scottish Government, 2008).

Limitations of Active Transportation & ATS Research

There are some shortcomings of research surrounding the built environment and active transportation. Most ATS research is descriptive in nature, uses small samples of volunteer schools, self-reported travel behaviour and doesn't take socio-economic status variables into consideration. However, randomly sampling school-goers, objectively verifying their travel behaviour, and establishing the socio-economic status of the families can be very difficult and prohibitively expensive. Overall, there is a general lack of exploration into attitudes of active transportation and active transportation to school within research. Furthermore, most research in this area is cross-sectional design, which means that research is carried out on a cross-section of a population at one point in time.

Given the need to understand behavioral changes associated with environmental attributes, longitudinal studies may be considered more appropriate. Such studies will help us determine whether the pattern of results reflects the ability of the environment to constrain or facilitate certain behaviors or reflects the type of person/family who chooses to live in certain neighborhoods (Krahnstoever Davison et al., 2006)

Research in Ireland

Research regarding ATS is relatively new to Ireland. Recent research carried out by the DTO (2005) revealed that in 1991, 24% of Irish school pupils were driven to school. This increased to 30% in 1996 and by 2002, 42% of pupils were driven to school. This increase in car usage has been matched by a decline in those cycling or walking from 46% in 1991 to 29% in 2002. The DTO (2005) states that 37% of all trips to school are 1 mile or less and 52% of all trips to school are 2 miles or less.

In 2002, the DTO conducted an extensive survey of school travel patterns in the Greater Dublin Area. All primary and secondary school pupils in the area were surveyed with a response rate of 46%. The survey was completed by the parents of primary school children and by secondary school pupils. The main reasons for not walking or cycling to school for primary and secondary school journeys included convenience, safety, distance, age and the weather (DTO, 2005).

The Green Schools programme supported the DTO in the implementation of SRTS pilot projects in the Greater Dublin Area. Green-Schools, known internationally as Eco-Schools, is an international environmental education programme, environmental management system and award scheme that promotes and acknowledges long-term, whole school action for the environment. It is run by An Taisce in Ireland. The aim of Green-Schools is to increase students and participant awareness of environmental issues through classroom studies and to transfer this knowledge into positive environmental action in the school and also in the wider community. Schools that have successfully completed all the elements of the programme are awarded the 'Green-Flag'. This award has now become a well-recognised Eco-Label, the award being renewed every two years (Green Schools, 2009). Green-Schools is a themed programme with schools working through seven steps and applying for the Green-

Flag. The latest theme implemented by Green Schools is school travel with the ultimate aim of increasing the number of pupils walking, cycling or using public transport. Green-Schools Travel is currently working nationally to promote ATS with the support of local and national government agencies.

Nelson, Foley, Gorman, Moyna & Woods (2008) conducted the first study to assess distance as a determinant of active travel to school among adolescent boys and girls in Ireland. Nelson et al. (2008) suggest that since the majority of Irish adolescents travel to school by bus or car they are missing out on important additional minutes of potentially health-promoting physical activity. Nelson et al. (2008) further argues that distance is the most important perceived barrier to active commuting, and a predictor of mode choice in Ireland. However, Woods, Fooley, O’Gorman, Kearney, Moyna (2004) contend that among Irish adolescents, 22% of car users live within 1 mile, and 39% live within 2 miles of their school. Nelson et al. (2008) suggest that where distance is not a barrier to active commuting, other factors such as convenient access to foot or cycle paths may inhibit walking or cycling.

Nelson et al. (2008) also contend that the advancing sprawl around major cities in Ireland, and increasing new developments without the provision of schools and local amenities, should be considered in policy guidelines for urban planning and development. In addition, Nelson et al. (2008) suggest that research considering the determinants of active travel among adolescents should apply a 2.5-mile criterion within which active commuting to school is achievable.

Conclusion

There is clear evidence to suggest that children are not getting enough physical activity on a daily basis. Furthermore, it appears that active transportation to school is in rapid decline, even though walking and cycling to school holds many benefits including, increased physical activity, lower BMI and psychological improvements. Concerns expressed by parents and children regarding walking and cycling to school include, distance, traffic, safety, fear of crime, “stranger danger”, lack of infrastructure and poor weather. Furthermore, a major determinant of AT and ATS is the built environment, its objective and subjective qualities impacting on both adults and children’s intentions to actively commute. These concerns and barriers will only serve to diminish levels of ATS further in the future. However,

opportunities do exist in the promotion of ATS using measures such as walking school bus, park & stride, and car-pooling, consequently reducing traffic congestion, pollution, obesity, and improving safety on our roads and social relations within our communities.

Rational for Research

There is a substantial deficit of research regarding barriers to and facilitators of ATS in Ireland including a lack of exploration of the attitudes of parents, pupils and teachers towards ATS. To date the only interventions have been limited pilot projects (as described above), both initiated in urban areas with large populations. Neither study has been published in a peer-reviewed journal. There is a need for recommendations to promote ATS in Ireland that are based on research in Ireland. We cannot presume that the same factors that are important to young people in the UK, US, or Australia (where most of the ATS research has been conducted) are equally important or relevant to young people here. While Nelson et al. (2008) shows us that distance to school plays an important role in Irish teenagers choice of travel mode to school, we need to know more about barriers, attitudes and facilitators to ATS in Ireland.

Research Aims

The overall aims of this research were to identify the barriers to and the facilitators of ATS in Ireland and to use the development, implementation and evaluation of a STP as a context in which to explore attitudes of ATS among pupils, parents and teachers.

METHODOLOGY

Pilot Study

Introduction

The aim of the pilot study was to examine the attitudes of pupils, parents and teachers to ATS, to determine how best to measure these attitudes and to search for a school in which to conduct a more in-depth exploratory study.

Participants

Participants included teachers, parents and pupils, drawn from rural and urban backgrounds. Teachers and pupils were accessed through local schools (n=5) in county Waterford all associated with The Waterford Sports Partnership's, Waterford Active Schools Program. Parents were accessed in an urban setting using door-to-door surveying. A sample group of (n=14) teachers, (n=74) children and (n=20) parents was achieved.

Measures

Interview/Questionnaire

A seven-question questionnaire was used to assess attitudes towards ATS (See Appendix 1). The ATS questionnaire was administered to teachers in a staff room situation with the prior consent of the principal. The ATS questionnaire was administered to parents using door-to-door survey.

Draw & Write

Draw & Write was used to enable the children communicate their thoughts regarding walking and cycling to school through drawings. The draw and write technique was administered in the classroom environment with the prior consent of the principal and teacher. The children were provided with a brief introduction to ATS. Pupils were asked to draw whatever came into their head with no answer being right or wrong. Pupils were asked not to look to their neighbour for help. The children were given three questions "Draw a healthy/unhealthy way to get to school", "Draw how they travel to school/How they would like to travel to school", "Draw a map of their route to school labelling dangers along the way".

Results

Interview/Questionnaire

Results from parents and teachers detailed the many benefits of walking/cycling to school. Certain concerns were raised regarding children walking and cycling to school. Environmental changes mainly included improvement in infrastructure. The promotion of ATS was seen as the concern of all in the community and at a national level. Necessary school efforts to promote ATS were also detailed.

Draw and Write

Results from draw and write indicated that children are aware of healthy and unhealthy forms of transport. Children showed a high awareness regarding Co2 emissions. Given the opportunity many children choose the car as their preferred transport to school. Pupils detailed aspects of their journey to school that made them feel safe or unsafe.

Conclusion

From the pilot study it was decided that draw and write would not be used in the main study to follow as it proved difficult to interpret the barriers and facilitators of ATS expressed within the drawings. Due to the lack of information received throughout the drawings it was decided that primary school children were too young for the main research. The pilot study was conducted in mainly rural schools in which children may have had no other travel options only to use the car, due to distance and lack of infrastructure. As a result it was decided that the main study would focus on a more urban school with real opportunities to encourage ATS.

Main Study

Introduction

This research involved both quantitative and qualitative data collection using repeated cross-sectional design. This means that the same people did not complete the questionnaires each time, only a cross section of the relevant population did. The triangulation of these methods will improve the validity of the findings. Data was collected before, during and after the development and implementation of the STP. The details of each method and phase will be explained in turn.

Location of Research

Stella Maris is an all girls secondary school located at Pond Road, Tramore, Co. Waterford with an enrolment of over three 350 students and 30 teachers (See Figure 1 Map of Tramore). The school is within close proximity to a cluster of schools and is located close to many residential areas of the town. The population of Tramore was estimated at 8,799 during the 2006 census and is expected to rise to 12,605 by 2013 (CSO, 2006). There are two entrances to the school: a side entrance and a main entrance, which is adjacent to a local community hall. Figure 2 shows that the school is serviced by one road leading to a busy junction at one end and a blind turn at the other. Car parking at the school is sufficient for teacher requirements only.

Figure 1: Location of Stella Maris Secondary School

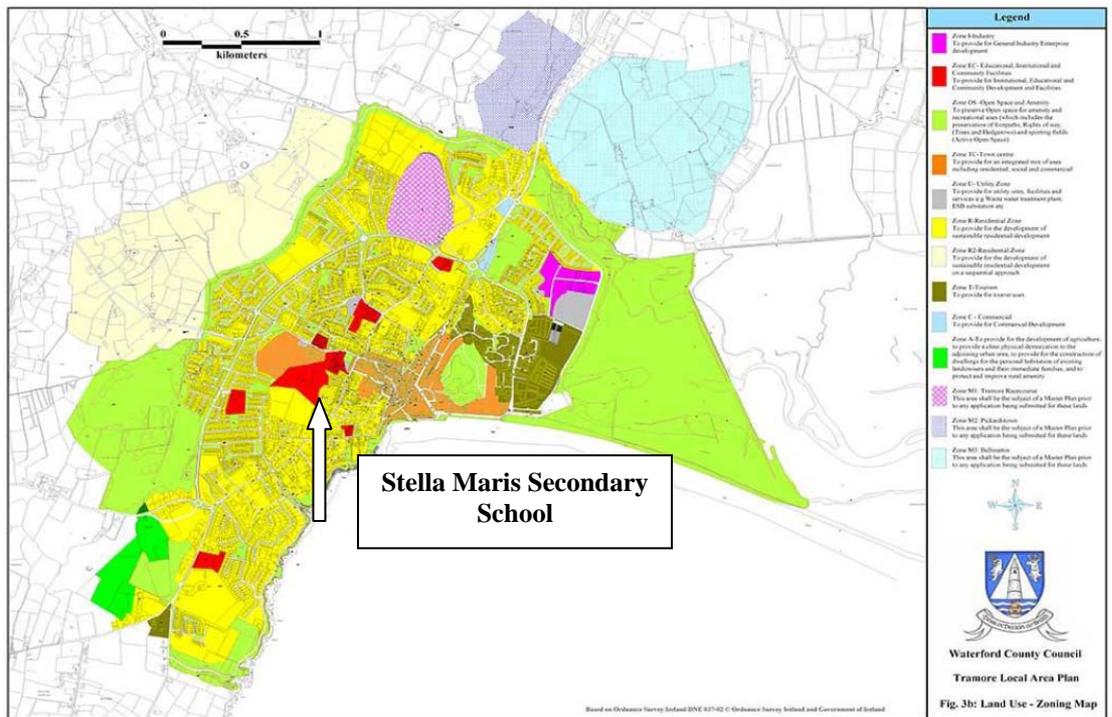
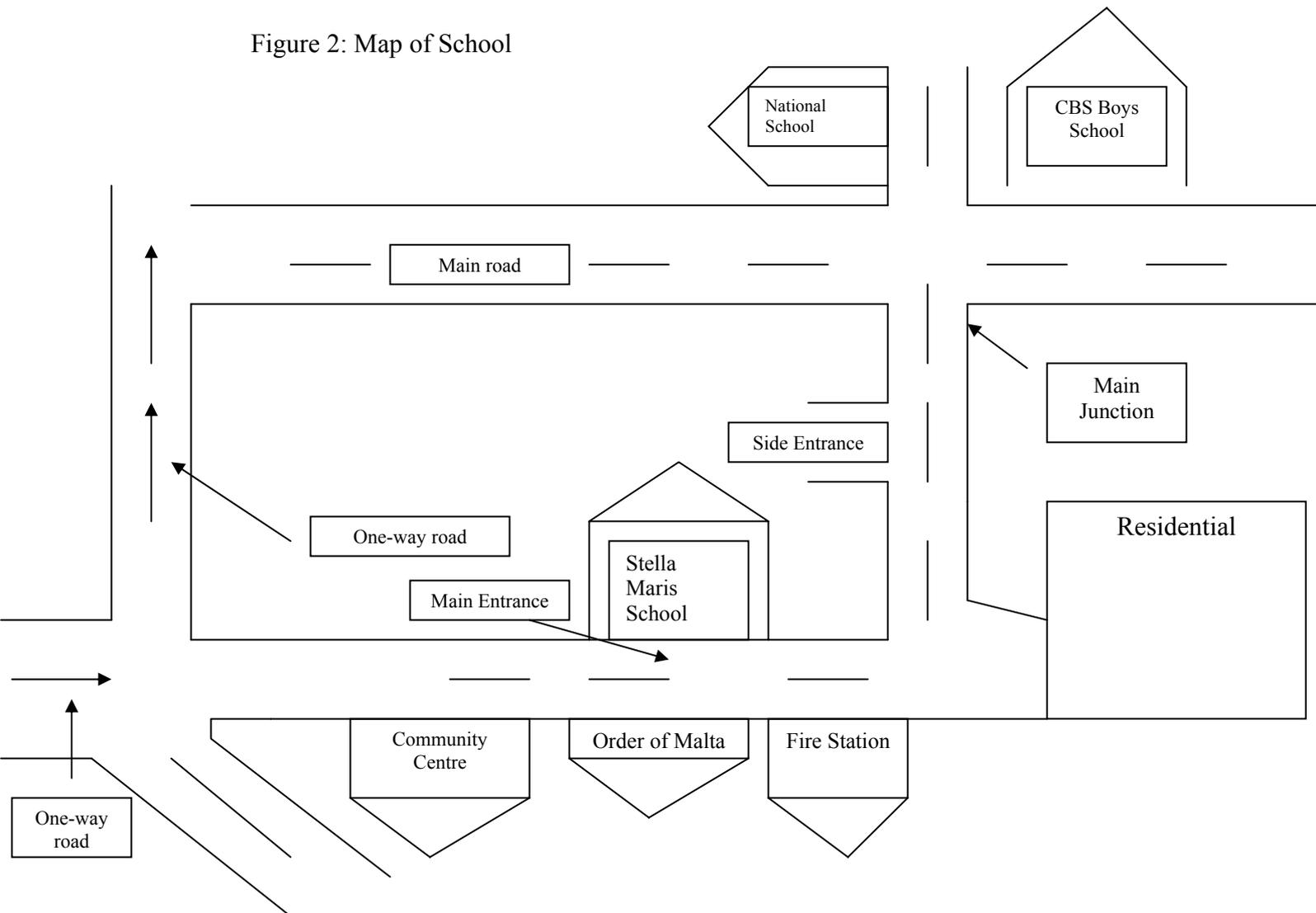


Figure 2: Map of School



Participants

The study sample consisted of all the female students of one secondary school their parents and teachers. Consent was given by the school principal to carry out the research. Participants were all volunteers and their identities remained anonymous.

Timescale

Baseline Measurements April – Sept 2008
Impact Measurements Dec–Jan 2008/2009
Outcome Measurements March – April 2009

Quantitative Measures

School Travel Plan

A school travel plan was developed in consultation with students, parents, teachers and community members (See Appendix 5). It was launched on October 8th 2008 coinciding with the start of International Walk to School Month. The main aims of the STP were to explore attitudes to ATS among pupils, parents and teachers, before, during and after its implementation.

ATS Questionnaire

Questionnaires (See Appendix 2) were devised and handed out to all classes present in the school during baseline, impact and outcome evaluation. Each pupil was given a questionnaire for herself (n=230) and also for his or her parents (n=230). All Teachers who were teaching at the time were given a questionnaire. Questionnaires (n=30) were also left at the teachers' desks in the staff room with instructions. Teachers were informed in advance of the possible disruption to their class during this period. Pupils were asked to fill out the questionnaire themselves, ask their parents to fill out the questionnaire and to bring them back to school for collection. I re-visited classes on a later date to collect the completed questionnaires. The same questionnaire was used at each stage of evaluation.

Hands up Survey

A Hands' up Survey was conducted at the school during baseline, impact and outcome evaluation to determine the transport modes used by pupils to travel to school. Pupils (n=180) were asked to put their hands up to the following questions. How do you normally travel to school? By car, walking, bicycle, carpool or bus. I then made a tally of the hands, which represented each mode of transport to school.

Walkability Analysis

A walkability analysis (US Department of Transportation, 2008)(See Appendix 3) conducted at baseline was carried out to rate the walkability of the town. This was an observational analysis conducted by (n=12) 5th year pupils and I. The Safer Routes to School Program in the United States developed the walkability survey. It used a points based system to determine the walkability of the neighbourhood with five categories of walkability .

Qualitative Measures

Observation

Observational analysis was carried out to assess the situation around the school entrances and roads servicing the school during off-peak and peak hours. Criteria used for observational analysis included:

- Car parking (yellow boxes, double yellow lines etc.)
- Volume of cars
- Speed of cars
- Driver conduct in the vicinity of the school (consideration for other road users i.e. pedestrians)
- Volumes of pupils' walking/cycling to school
- Pupil conducts whilst entering the school (consideration for others, where they crossed the road etc.)

Observation took place during morning drop-off, lunch drop-off and pick-up (baseline only) and evening pick-up at baseline, impact and outcome stages of data collection.

Focus Groups

Student Council Members (n=8), Green School Committee members (n=6) and first year pupils (n=29) were each given a separate twenty-minute presentation regarding walking and cycling to school (see appendix 4). This was followed by a 20-minute discussion of the benefits of walking and cycling to school, their concerns regarding walking and cycling to school and also changes required to promote it. I used a dictaphone to record these focus groups done at baseline, impact and outcome evaluation stage.

Parent Council Meeting

At baseline, the parent council (n=12), accompanied by the school principal was given the same presentation as pupils introducing the topic of ATS. Afterwards they were asked for their concerns relating to ATS and the changes they believed were needed to facilitate ATS. I noted these by hand. These meetings also occurred at impact and outcome evaluation stage. Members were updated and comments noted.

Meeting with Roads Engineer

At baseline, I met with the head of The Waterford County Council to inform the council of the STP. Also discussed was the development of infrastructure conducive to ATS and safety issues surrounding ATS. The support of the council was also discussed. All comments were noted by hand.

Annual General Meeting (AGM)

The AGM for Stella Maris Secondary School was held at the start of the new school year and was open to all parents. The parents (n=52), parent council (n=6) and the school principal were given the same presentation used with parent's council and pupils. I also presented the results of baseline data collected regarding ATS and a draft of the STP. Parents and parent council members were then asked for their opinions and comments on the STP. I noted these by hand.

Researcher - Pupil reaction to the STP

The STP was given out to students in October 2009 before the kick-off day. Subsequently, I meet randomly with students (n=26) during their lunch break in the

all purpose room at the school to gauge their reaction to the plan. I took memo notes of comments received from pupils.

Pupil – Pupil reaction to the STP

Forth year students (n=6) agreed to ask fellow pupils their thoughts on the STP (after kick-off day) and what further changes were needed to promote walking and cycling to school? Pupils recorded the data by hand in memo form.

Meeting with 4th Year

The new transition year students of 2008/2009 were given the same presentation as used with previous groups, results of data collected at baseline and a draft of the STP. Pupils were then asked for their opinions and comments on the STP. I noted these by hand.

Data Analysis

Recorded focus groups were entered into QSR Nvivo7 and processed using the coding system, which allowed for the construction of themes throughout the data. Themes were allowed to emerge through repeated reading of the transcripts.

Key concerns, topics or issues, were that were very obviously repeated throughout the text. Once a topic (word or phrase) was mentioned by a participant it was highlighted as a node. Nvivo was used to highlight other instances of the word and/or phrase. The contents of these other instances were then checked for similarity with the initial theme. Once all instances of a given theme were found, I moved on to identify the next topic (word/phrase). This process was repeated until all the topics were named. “Key” or “Major” themes were classified by the amount of discussion of them or reference to them by focus group participants. For example body image concerns were constantly discussed by the girls to the extent that they almost took over or dominated discussions. “Minor” or less important themes were discussed to a lesser extent and did not arise in every focus group.

An analysis of qualitative data recorded by hand was made using thematic content analysis. This was used for identifying, analysing and reporting patterns or themes within the data collected. Analysis of quantitative data was carried out using SPSS computer programme. All data and files will be stored on CD's by my supervisor at WIT.

Ethical Considerations

Children were given the opportunity to indicate their willingness to partake in the study. All parties were advised that they were not obliged to take part in the research. All participants remained anonymous throughout the study. Initial ethical clearance for pilot research was obtained from the ethics committee at The Waterford Institute of Technology.

RESULTS

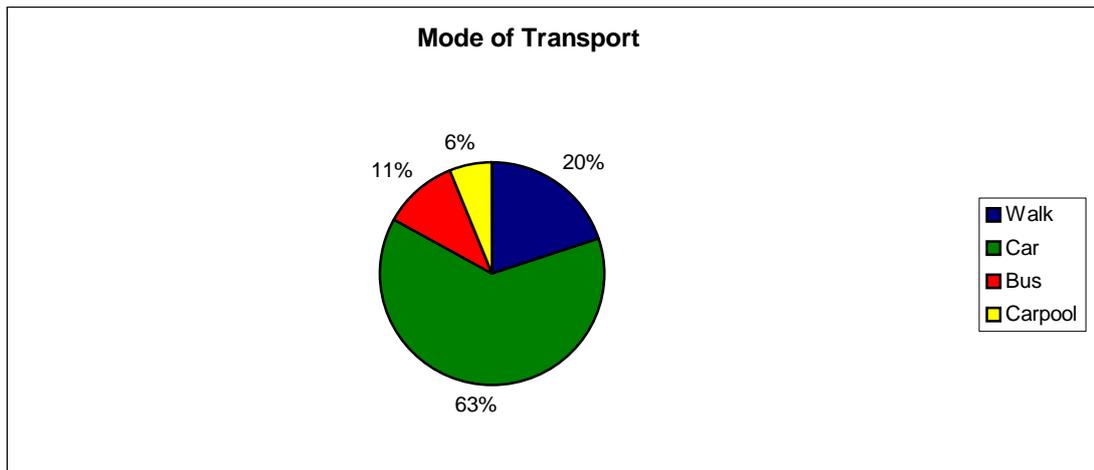
Baseline Quantitative

Questionnaires

Student Questionnaire

A total of 50% (n=115) of questionnaires handed out to pupils were returned. Distance from school ranged from 1,500 metres – 10km or a 5 to 30-minute walk for those walking to school. Figure 3 shows the main mode of transport was the car. Pupils understood the many benefits of walking and cycling to school these are stated in Table 1. Also illustrated in Table 1 are their concerns regarding walking and cycling to school.

Figure 3: Mode of Transport



Pupils saw the promotion of walking and cycling to school as the responsibility of all including parents, students, teachers and government.

“I think parents have to say that you would have to walk home so you would get more exercise”.

“Parents should encourage their child to walk to school if they are living near the school”.

“ I think that our welfare is everyone’s concern”.

Pupils suggested a school policy where students must walk twice a week when then can.

“There should be some sort of incentive for students to walk/cycle to school – a reward or a reason to actually do it. This may be needed to encourage students”.

Table 1: Result from Student Questionnaires

Benefits	Concerns
Traffic <i>“Less traffic on roads”</i>	Traffic <i>“There are too many cars at the school in the morning and evening times”</i>
Pollution <i>“Walking is better for the environment”.</i>	Cars <i>“The road at the school is too narrow and drivers do not pay attention”.</i>
Exercise <i>“I think that the benefits of walking are, you keep yourself fitter and you burn calories. That’s very important to me”.</i>	Facilities <i>“If they had proper cycle lanes and more traffic wardens”.</i>
Alertness <i>“Walking wakes you up in the morning before school”.</i>	Bags <i>“I cannot walk to and from school as the weight of the bags are too heavy, and I also have several bags”.</i>
Independence <i>“It’s a way of socialising”.</i>	School Work <i>“Too much emphasis is being put on studying and schoolwork”.</i>

Teacher Questionnaire

A total of 50% (n=15) of teacher questionnaires were returned completed. Benefits and concerns raised by teachers are illustrated Table 2 below. Teachers stated that it was the duty of all to promote walking and cycling to school with parents playing the biggest part.

“I feel that all groups should be concerned about this issue and all need to be involved to tackle transport issues”.

“I think its up to everyone to encourage this and everyone has a part to play in it”.

“I just think if this is to happen all should be consulted and have an input”.

“Parents are too willing to drop them as close to the school as possible”.

“Most importantly parents need to encourage this at home”.

“Parents need to stop dropping off students at the school gates”.

Teachers suggested the continued learning of the safe cross code, carbon footprint scheme, reward systems, drop-off zone, a parent and older student mentor program for 1st and 2nd year students as methods to promote walking and cycling to school. Pedestrian crossing and footpaths featured highly in the facilities needed to promote walking and cycling to school. Interestingly, a walk to school group and a cycle to school group did not feature highly when compared to other suggestions as a method to promote walking and cycling to school.

“Learning of the Safe Cross Code (not a ‘cool thing’ but vital)”.

“I would suggest that any older pupils mentor this programme for incoming 1st/2nd year pupils, lots of pupils will follow by example especially of their peers”.

Table 2: Results from Teacher Questionnaire

Benefits	Concerns
Traffic <i>“Parking & traffic congestion at school gates might be lessened”.</i>	Weather <i>“Irish weather can be very wet and students are exposed to the weather”.</i>
Pollution <i>“Walking is more eco-friendly”.</i>	Facilities <i>“Is there a safe place for bikes in school?”.</i>
Alertness <i>“Walking/Cycling wakes you up for the day”.</i>	Pupils <i>“Pupils simply do not want to walk or cycle to school”.</i>
Independence <i>“There is the benefit of giving a young person independence and a sense of personal freedom”.</i>	School Bags <i>“A big concern is the weight of bags students are carrying, especially if they have other training e.g. sports”.</i>
Health Benefits <i>“Obvious health benefits”.</i>	Cars <i>“Traffic congestion during peak times is a major concern”.</i>

Parent Questionnaire

A total of 39% (n=78) of questionnaires given to parents were received completed. Parents understood the benefits of walking and cycling to school and these are illustrated in Table 3 along with the many concerns expressed regarding their child walking or cycling to school. Facilities necessary to encourage walking and cycling

to school included pedestrian crossings lighter school bags, lollypop personnel, garda involvement, and bigger lockers were all mentioned.

“Until there are more pedestrian crossings within a mile radius of the school and more footpaths I don’t think the plan is feasible”.

“Lollypop ladies and garda involvement is necessary for the safety of pupils”.

“Bigger lockers to store equipment, books, cooking equipment etc thus encouraging them to walk or cycle because they have less to carry”.

Walk and cycle to school groups did not feature on many parent questionnaires. Interestingly, the majority of parents believed that it was their responsibility to encourage their child to walk or cycle to school.

“Parents hold the most control and influence over their children”.

“No one should interfere with parent’s decisions on how a child is escorted to school”.

“Depending on the circumstances regarding footpaths, crossings etc. I think it should be solely parents who make the choice”.

“Parents greatly influence their children and should promote initially walking to school, if it is a reasonable distance from home to school. It would be good practice for teachers and government to reinstate this”.

“It should be a normal activity and not an exception, promotion of this starts with parents/guardians”.

Parents stated that the commute to school was not associated with the commute to work.

Table 3 Results from Parental Questionnaire

Benefits	Concerns
<p>Exercise</p> <p><i>“It is a form of exercise which a lot of kids might not get otherwise”.</i></p>	<p>Traffic</p> <p><i>“There is too much traffic around Tramore during peak times for my daughter to walk or cycle to school”.</i></p>
<p>Environment</p> <p><i>“Walking reduces your carbon footprint”.</i></p>	<p>Speed</p> <p><i>“Cycling in Tramore is dangerous due to the volume of cars and speed”.</i></p>
<p>Costs</p> <p><i>“Walking reduces the costs associated with driving”.</i></p>	<p>School Bags</p> <p><i>“School bags are a great concern to me as my daughters bags are way too heavy, and they sometimes have more than one bag”.</i></p>
<p>Social</p> <p><i>“Walking is healthy and sociable and reduces stress”.</i></p>	<p>Distance</p> <p><i>“As it is seven miles to school it is not possible for the children to walk”.</i></p>

Hands up Survey

A total of (n=175) pupils took part in the hands up survey, which, concurred with the questionnaire regarding the mode of transport to school. No pupil cycled to school.

Walkability Analysis

Overall the neighbourhood of Tramore rated 18 points out of a potential 30 points on the walkability scale. As a result it may be suggested that the walkability of Tramore is sufficient for active transport but needs some work. Results indicated that footpaths were missing in certain areas. The road was often too wide to cross safely. Parked cars often blocked footpaths and obstructed the view of traffic. Drivers acted in a responsible manner during the walkability analysis. Dog fouling was quite apparent on footpaths. Footpaths started and stopped in certain areas making it difficult to walk continuously to a destination without having to cross roads.

Baseline -Qualitative

Observational Analysis

Picture 1: Photograph at side entrance during morning drop-off April 2008.



Picture 2: Photograph at main junction during morning drop-off April 2008.



Picture 1 shows cars dropping pupils at the side entrance of the school in the morning. Pupils approaching the school on foot along this road from the major junction walked directly on the roadway; there is a footpath on one side only. Major traffic disruption was observed when cars met along this route travelling in opposite directions. Picture 2 shows the major junction, which was extremely congested due to the three schools in close vicinity and the 9am starting time. This also restricted walking room for pupils walking on the road and put them in danger.

Cars parked on both sides of the road and on the footpath at the main entrance of the school at 1 o' clock (lunchtime). Cars were parked on double yellow lines outside the school at the main entrance. Many cars picking up pupils at the main entrance stopped in the middle of the road. Cars also parked at the bend on the road close to the schools main entrance causing an obstruction. The staff car park was full at this time. During lunch (1pm-2pm) cars congregated at the non-parking zone at the fire station opposite the main entrance, these cars contained pupils. At the side entrance

five cars belonging to students were parked on the roadside. These cars left at lunchtime (1pm), returned after lunch (2pm) and all parked obstructing the footpath at the side entrance of the school. At 2 o'clock the road at both the main and side entrance appeared less hectic when compared to the one o'clock pick up.

Picture 3: Photograph at main entrance during evening pick up April 2008.



Picture 4: Photograph at side entrance during evening pick up April 2008.



Picture 3 shows cars (n=13) parked at the main entrance of the school to pick up students. Cars were parked at the main entrance on double yellow lines and yellow boxes, many had their engines idling. Pupils waited in large numbers at the main entrance often blocking the view of the road of teachers exiting the main entrance. Picture 4 shows cars parked at the footpath at the side entrance of the school. Picture 4 also shows pupils walking on the road towards the main junction. The majority of cars travelled from the major junction past the side entrance towards the main entrance. However, once a car approached in the opposite direction the area became extremely hazardous at the side entrance as parked cars and students walking on the roadway not using the footpath narrowed the road.

Focus Group

Figure 4: Student concerns relating to walking & cycling to school

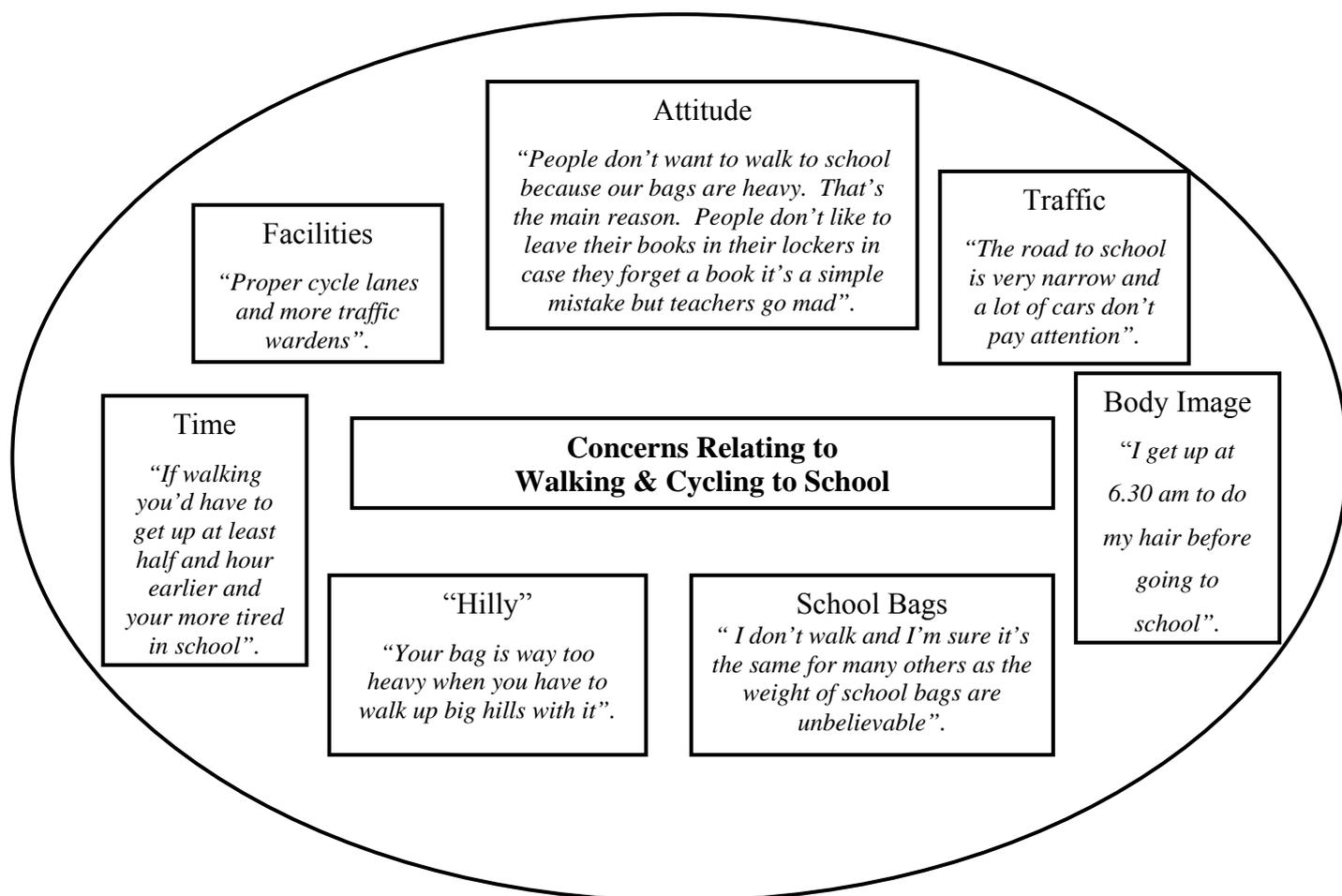


Figure 4 shows the concerns expressed by pupils regarding walking and cycling to school during separate focus groups with first year pupils (n=29), members of the current student council (n=8) and The Green School Committee (n=6). Pupils understood the benefits of walking and cycling to school. Numerous pupils commented on the importance of social interaction and having fun on the way to school with their friends when walking or cycling. It is important to note that the key themes expressed in this focus group are inter-related e.g. bags and attitude.

Annual General Meeting (AGM)

The AGM was held on Tuesday 30th September. Those attending the meeting made the following observations regarding ATS. The STP should be encouraged and not forced upon parents and pupils. All those who attended the meetings agreed that the development of a STP was necessary and fundamental to the future viability of walking and cycling at Stella Maris Secondary School. Heavy school bags were mentioned frequently as a barrier to ATS, one parent suggested that her daughter

would often have cookery and sports on the same day and as a result carried three bags to school on that particular day. I raised the idea of 'wheelie bags', however, it was suggested that pupils see these bags as 'uncool'. The lack of a pedestrian crossing in the vicinity of the school and also their improper use by both parents and pupils was raised as a concern. A footpath or pedestrian crossing was suggested to alleviate the potential hazards at the side entrance of the school. Large traffic volumes were expressed as a real danger especially at peak times. Furthermore, members of the council suggested that younger pupils might be more likely to change their travel patterns. Numerous parents said that cycling as a difficult mode of transport to promote and suggested that it may be better suited to younger children especially boys.

One parent made the suggestion that the three schools should collaborate to ensure the success of the plan and suggested a lollypop lady and pedestrian crossings as necessary for the safety of pupils. A pedestrian crossing at the side entrance of the school to enable pupils access the footpath on the other side of the road was suggested. Many parents were of the opinion that parking restrictions lacked consideration for parents dropping pupils to school. One parent asked where students would park their cars and felt it was unfair that parking was not provided for students at the school. A one-way system where cars would travel from the major junction towards the school to alleviate congestion was also suggested; one parent suggested that each individual neighbourhood could have their own Walk to School Programme where pupils would meet and walk to school together. Parents raised the speed of vehicles as being a concern. It was suggested that speed of cars might increase due to the new drop-off point, as cars might then speed past the main junction to the school where pupils are crossing.

Meeting with Roads Engineer

A meeting took place on Thurs 22nd May 2008 with the head of the Waterford County Council roads engineer at their offices in Tank Field, Tramore. The local roads engineer was of the view that the safety of pupils walking to school was a major concern for both herself and the council. The engineer identified as being the main safety concern, the difficulty children have crossing the road as their perception of car speed and distance is not the same as an adult. However, the council engineer suggested that it would take one or two years to facilitate the school with a pedestrian

crossing and this would be a long-term project. The engineer also suggested that cycle lanes and footpaths are currently being lobbied for and would be considered as long-term council projects. I identified the possibility of a one-way system to ease traffic congestion on the roads servicing the school to the engineer. However, it was suggested that this would not be an option as The Fire Service and Order of Malta required access to the road in both directions. Finally, I was assured that the County Council are committed to the further development of Tramore as a pedestrian friendly town.

Pupil Reaction to the STP

Most positive reaction came from the younger pupils (1st to 3rd years). First year pupils were very excited about the idea of walking with their friends to school and especially looked forward to the kick-off event, some even suggested fancy dress walk to school days. Students were concerned about the early mornings when they would walk to school, but overall believed it would be “*a great laugh*”. Older students did not see the STP in such a positive light. A 6th year class were asked for a show of hands if they felt the plan was a good idea. No student put up her hand. Pupils commented on the weight of their bags and said they could not be expected to walk with their heavy bags. Comments by older students indicated that they were not interested in the STP and did not like the idea of “park & stride”. These pupils were of the opinion that the STP was most suited to younger age groups.

Pupil Comments after the STP kick-off day

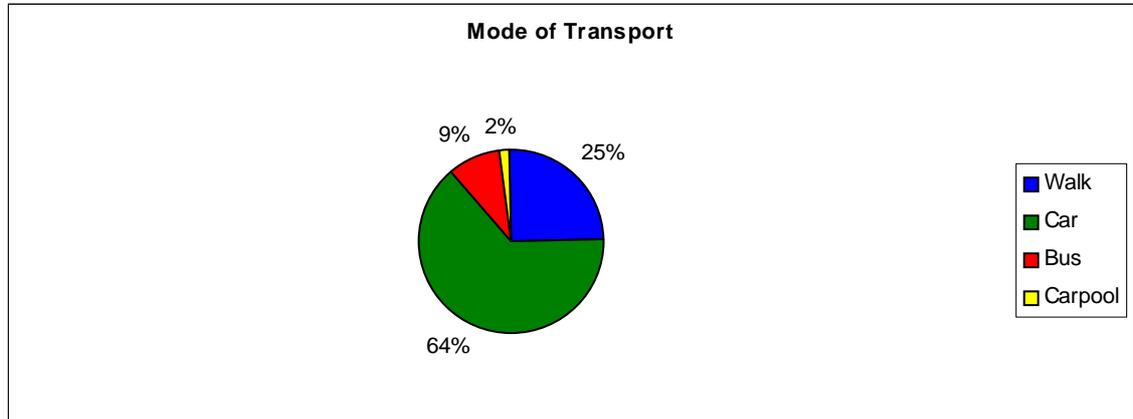
First, second and third year pupils were most enthusiastic about the plan and agreed that the kick-off event was great fun. Pupils suggested that it was mostly first years who took part in the walk to school day. Pupils commented on the need for another footpath leading to the school side entrance. Heavy school bags remained the biggest issue for not walking to school. Participation by teachers in walk to school days was seen as a measure to encourage pupils to walk to school.

Quantitative-Impact

Questionnaires

Student Questionnaire

Figure 5: Mode of transport to school.



A total of 22% (n=44) of student questionnaires were returned completed. Figure 5 represents the mode of transport at impact evaluation. Distance, benefits, concerns and changes needed remained the same as baseline evaluation results. When asked if they had made any changes to their mode of transport to school since the launch of the STP the majority of pupils answered no. However, some commented that they now share a lift to cut down on traffic around the school and some have started walking on certain days of the week. Changes noticed by the pupils since the development of the school travel plan included an increase in the numbers of students walking to school. Many suggested that the STP had created greater awareness of walking to school. Pupils also suggested that they were now using new drop-off and pick-up points as more parents dropped pupils off at a nearby shop to walk the remaining distance to school.

“More people walk because everyone had fun at the walk to school day and didn’t mind walking”.

“Lots of people are walking to and from school. I think this is because they realised the benefits of it”

“I started to walk but now my back hurts from carrying my extremely heavy bag”.

“I have walked more but it is not easy with my brother going to school in another direction”.

“Parents park in more suitable places”.

Teacher Questionnaire

A total of 24% (n=7) of questionnaires given to teachers were returned completed. Benefits and concerns of ATS concurred with those at baseline evaluation. However, new themes that emerged throughout teacher questionnaires were bullying, 'stranger danger' and gangs. Changes noticed at the school since the development of the STP included less congestion at peak times.

"It is easier to leave the school at 4 o'clock".

Suggested changes needed included an ongoing awareness campaign, footpaths, and further education of parents, storage facilities for bicycles, and finally a strategy to facilitate carrying schoolbags.

Parent Questionnaire

A total of 13% (n=26) of questionnaires given to parents were returned completed. The majority of parents indicated the same results for distance, benefits and concerns as mentioned in baseline questionnaires. However, concerns relating to bullying, gangs of pupils and fear of assault were mentioned for the first time.

"My main concern is the danger of assault".

"One lunch break, my daughter was home and it was suggested that she walk back, but she did not want to encounter others who were gathered together".

"There are a lot of boys and girls hanging around in groups at shops which is off putting for pupils and adults, they can be very loud and pass comments to people as they walk pass".

Parents indicated that they were using new drop-off and pick-up points to allow their daughter(s) walk the remaining distance to school.

"Drop-off and collect at Centra. As we live too far away from the school to walk or cycle, we thought the walk from Centra would alleviate the car congestion at the school at peak times".

Other parents reported using carpooling with neighbours and using the suggested one-way system when travelling to the school. Further changes needed to promote ATS remained the same as baseline results.

Hands Up Survey

A total of (n=165) pupils took part in the hands up survey on Wednesday 10th December 2008. Results were the same as those found at baseline. Still, no pupil cycled to school.

Qualitative-Impact

Observational Analysis

Picture 5 Photograph at the main entrance during morning drop-off. December 2008



Picture 6 Photograph at the main entrance during morning drop-off December 2008.



Overall, the impact of the school travel was not entirely visible. Picture 5 shows parents stopping on double yellow lines at the main entrance to the school to drop-off their daughter(s). Picture 5 also shows cars parked alongside the parking restrictions at the main entrance of the school. Picture 6 shows cars dropping pupils at the main entrance at the parking restrictions during morning drop-off.

Picture 7: Photograph at the main entrance during evening pick up December 2008.



Picture 8 Photograph at the main entrance during evening pick up December 2008.

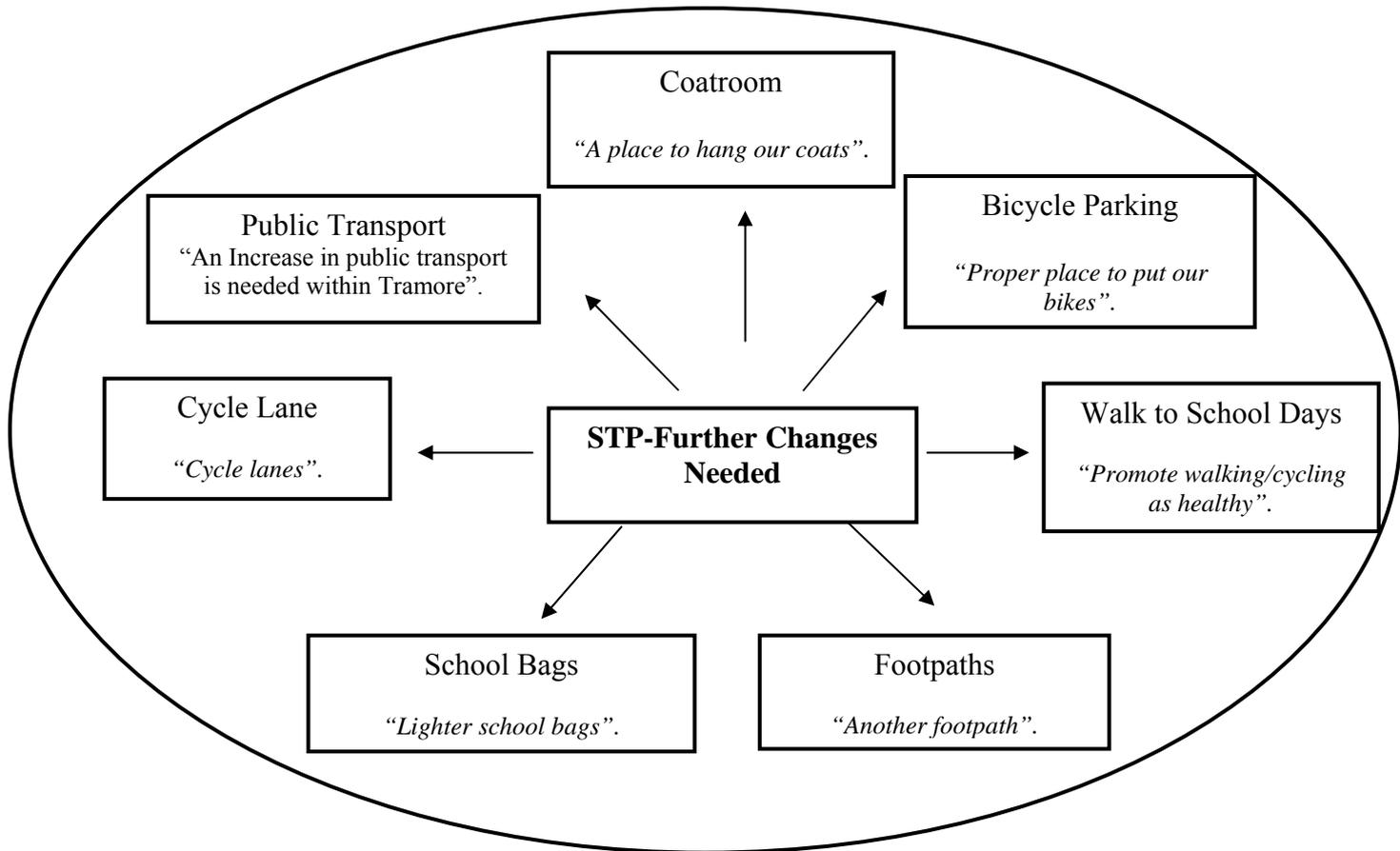


Picture 7 shows cars parked on double yellow lines and on the yellow box at the main entrance of the school during evening pick-up. Picture 7 also shows the parking restrictions in place, which no cars parked in or around the vicinity of the main entrance. Picture 8 shows pupils gathered at the main entrance obstructing the view of cars leaving the school through the main entrance. Picture 8 also shows cars parked on the side of the road at the main entrance collecting pupils. Picture 8 shows traffic beginning to ease at 3.30pm.

Focus Group

Figure 6 illustrates the results of a focus group attended by pupils (n=29) who gave their suggestions regarding further changes needed to promote walking and cycling to school.

Figure 6 Results of Focus Group on STP at Impact Assessment



Parent Council Meeting

Members of the parent council (n=12) and the school Principal gave their opinions regarding the STP at the parent council meeting on Tuesday 27th January. Concerns were raised regarding the use of ‘wheelie bags’ and pupils falling over them and the possibility of insurance claims. A lollypop lady was suggested to help pupils cross the main junction to the school, however, in the current economic circumstances many felt the hiring of a lollypop lady should be ruled out. The main junction leading to the school was seen as the major safety issue for pupils walking to school as large volumes of traffic use the road at peak school times. The bus stop at the main junction was also identified as a potential hazard as cars have to pass it while it is parked causing safety issues for pupils crossing the road.

The lobbying of local T.D's was seen as an important measure to obtain funding for pedestrian crossings. Many believed that local engineers should witness the problem at the main junction first hand. As a result they would be more inclined to help with its alleviation. Incentives for pupils walking to school and the further promotion of the suggested one-way system were also identified as a method to promote walking/cycling to a greater extent. The parking restrictions and drop-off zone were deemed unsuccessful and not beneficial to the promotion of walking to school.

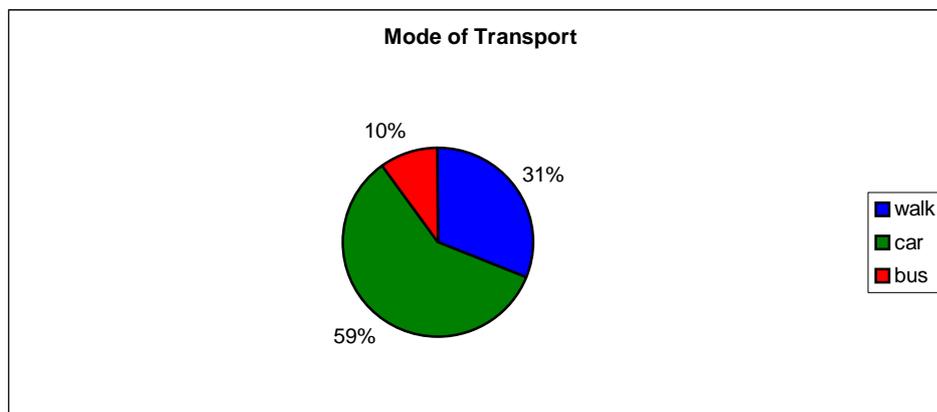
Quantitative -Outcome

Questionnaires

Student Questionnaire

A total of 20% (n=39) of questionnaires were returned completed. Figure 7 shows the main mode of transport to school at outcome evaluation was the car. Students did not mention carpooling at this evaluation stage.

Figure 7: Mode of Transport



An increase was seen in pupils reporting walking to school. Distance, benefits, concerns and changes needed remained the same as at baseline and impact stages of evaluation.

"I think it would make me fit, because every teen dreams of being fit, I think walking to school is a great activity".

"You feel more awake when you get to school and its also healthier".

"I mostly walk to school with my brother and sister and I think its kind of fun walking with them".

When asked if they had made any changes to their mode of transport to school since the development of the STP the majority of pupils answered no. However, as reported at impact evaluation stage some commented that they now share a lift by car to cut down on traffic around the school and some now walk on certain days of the week. Changes noticed by the pupils since the development of the STP remained the same as those reported at impact evaluation stage and included an increase in the numbers of students walking to school, a greater awareness of walking to school and new drop-off and pick-up points.

“I see a lot of people walking these days”.

“I go with my aunt now so my mum doesn’t have to, my aunt has to go that way anyway”.

“We always drive to school. It is quicker”.

“I cycled to school once. I had never cycled to school but it was fun”.

Teacher Questionnaire

A total of 13% (n=4) of teacher questionnaires were returned completed. Results regarding benefits and concerns of ATS remained the same as results at baseline and impact. Changes noticed at the school since the development of the STP included less congestion at peak times.

“Some improvements can be seen in the traffic at the front entrance of the school”.

“Students are more aware of the benefits of walking and cycling and if possible do so”.

Further changes needed were ongoing awareness campaigns, footpaths, and education for parents, storage facilities for bicycles and lighter schoolbags.

“It could be useful to have a class on ‘Safety on the Road’ to inform students of the danger of not using footpaths”.

Parent Questionnaire

A total of 17% (n=33) of questionnaires given to parents were returned completed. Distance, benefits and concerns listed were the same as mentioned in baseline and impact evaluation questionnaires.

“Its still dangerous and there is still a lot of traffic”.

“Only when facilities are made available would we as parents feel happy about allowing our daughter to travel to school by walking/cycling. At present it is not feasible to encourage change as it would be a health and safety concern”.

“No changes are needed the roads are perfect there are footpaths”.

Bullying and gangs remained a concern for parents. Change in travel patterns involved using new drop-off and pick-up point, carpool, and using the suggested one-way system.

“My daughter was normally collected after school but now walks home in the afternoon”.

“My daughter now walks home half way”.

“She goes with someone else now, so its one person driving instead of two”.

“We now share a lift with another family”.

Further changes needed to promote ATS remained the same as baseline, and impact results.

Hands Up Survey

A total of (n=145) pupils took part in the hands up survey in March 2009. Results from the Hands up Survey concurred with the questionnaires regarding the mode of transport to school at outcome evaluation. Still, no pupil cycled to school.

Qualitative -Outcome

Observational Analysis

Picture 9: Photograph at the main entrance during morning drop-off March 2009.



Picture 10: Photograph at the main entrance during morning drop-off March 2009.



Picture 9 shows cars dropping pupils at the main entrance of the school parked on double yellow lines and the yellow box. Picture 9 also shows cars parked at the community centre opposite the main entrance. Picture 10 shows cars parked on double yellow lines and on the yellow box at the main entrance while dropping pupils at the school. Picture 10 also shows pupils entering the school through the main entrance, which became hazardous when teachers arrived in their cars and entered the grounds of the school through the main entrance.

Picture 11: Photograph at the side entrance during evening pick-up March 2009.



Picture 12: Photograph at side entrance during the evening pick-up March 2009.



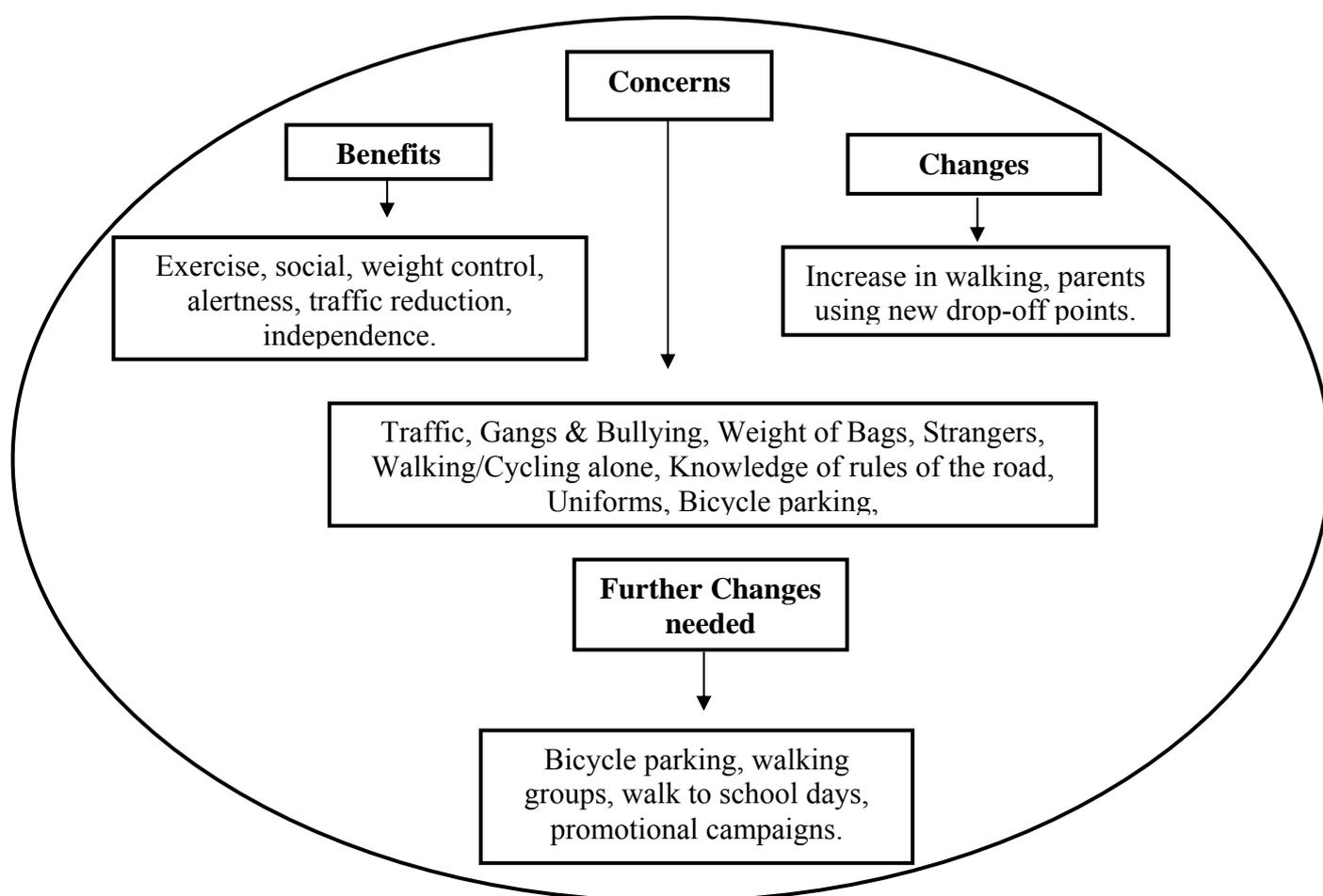
Picture 11 shows pupils leaving the school on foot through the side entrance and walking on the roadside towards the main junction. Picture 11 shows cars parked beside the footpath at the side entrance. Picture 11 also shows cars parked directly at the side entrance picking up pupils. Pictures 12 shows cars traveling from the major junction towards the side entrance.

Improvements were seen in the flow of traffic from the main junction towards the side entrance of the school. Many cars also contained more than one pupil, which may suggest carpooling.

Focus Group

A focus group was carried out with members of The Student Council (n=8), The Green School Committee (n=14) and the Sports Committee (n=5). Figure 8 below represents a summary of the data collected.

Figure 8: Summary Results of Focus Group at Outcome.



Students still expressed many concerns.

“Our bags are so heavy and sometimes I have other bags. We can’t use our lockers as we need our books for homework and teacher will kill us if we don’t have it done”.

“The cars don’t see you crossing the road”.

One pupil expressed her concerns regarding cycling to school.

“I don’t know the rules of the road and it’s hard to indicate and turn with a heavy bag on your back”.

Another pupil gave her experience of wearing a helmet on the cycle to school.

“When I was cycling to school my friends called me names because I was wearing a helmet”.

Pupils expressed their attitudes of walking and cycling to school regarding gangs and bullying.

“I feel intimidated by others as I cross by the shop”.

“You’re on your own and when you don’t know who’s behind you, you would be scared”.

“Gangs probably affect younger pupils, not that they are doing anything there’s just so many and they may be intimidating”.

“I would walk on my own in Tramore it doesn’t bother me. People don’t have a fear of strangers in Tramore”.

Parent Council Meeting

Members of the parent council (n=12) and the school principal gave their opinions regarding the STP. The parent council meeting was held on Wednesday 1st April. The major junction remained a concern for all. Parents were also concerned about bicycle parking facilities at the school. Pedestrian crossings also remained a top priority for parents. Major dissatisfaction was expressed about the lack of response from local T.D’s to whom a letter was sent to get their support for pedestrian crossings at the school and major junction. Overall, many agreed that the STP had increased awareness of walking/cycling to school.

DISCUSSION

The purpose of this research was to identify the barriers to and the facilitators of active transportation to school in Ireland and to use the development, implementation and evaluation of a STP as a context in which to explore attitudes of ATS among pupils, parents and teachers.

The main mode of transport to school was the car. Expressed benefits of ATS included increases in physical activity, the creation of greater independence, increased alertness during school time, and a reduction in pollution and traffic congestion. Barriers identified by participants included the weather, a lack of infrastructure and facilities favourable to walking/cycling, the heavy weight of school bags, personal safety, body image, and a lack of time. Pupils main concern about walking and cycling to school was their body image. Parents were especially concerned about the safety of their children on the roads and expressed concerns regarding bullying, gangs and fear of assault during the latter stages of evaluation. All participants agreed that parents should be the main promoters of ATS. The commute to school was not associated with the commute to work as identified by other research. Following the implementation of the STP, there was a greater awareness of the ability of pupils to walk/cycle to school, increased numbers of pupils walking to school, increased carpooling and the use of pick-up/drop-off points away from the school.

As with all research this research has certain limitations. It was exploratory in nature, limited to an all-girls school in a single geographical urban area. These factors limit the generalisability of the study. Measures of transportation to school were self-reported. The questionnaire response rate was poor and decreased with each repeated measure. This may be explained by the simple boredom of having to repeatedly complete three questionnaires of the same nature. Also the same participants did not fill out the questionnaires at each evaluation stage making it difficult to determine a change in attitudes overall. The potential confounding effects of seasonality may also have an impact on results as the weather generally improved in the latter stages of evaluation. A friendly relationship formed between pupils and I due to the nature of research and my subsequent employment at the school, which

may have compromised results however, one may suggest that this gave me a greater insight and enabled richer data collection.

These results will be discussed under the following headings: benefits of ATS, infrastructure-the real barrier, safety, body image, stranger danger, the need for change, opportunities for change and finally conclusions and recommendations for the future.

Benefits of ATS

All participants in this research identified the many benefits of children walking and cycling to school as identified in the literature regarding the benefits of ATS. The most common benefits expressed by pupils, parents and teachers included increases in physical activity, greater independence, increased alertness during school time, and a reduction in pollution and traffic congestion. Other benefits were similar to those identified by Inchley and Cuthbert (2007). The most common of which were keeping fit, social benefits such as spending time with friends, staying healthy, being more environmentally friendly, and practical advantages such as saving money and getting to school more quickly (Inchley et al., 2007). Inchley et al. (2007) also identified mental health benefits such as increased confidence, feeling good, feeling calmer and sleeping better.

Furthermore research by Mc Millan (2006) suggests that ATS promotes the physical and mental health of children. As mentioned previously, Zahner et al. (2006) also propose that physical activity does not only positively influence a person's physiological traits, but has also a positive effect on their psychological state. Furthermore, Rothlisberger et al. (1997) suggest that regular physical activity can increase an individual's ability to cope with stress and may lead to an improved health perception and quality of life. Throughout this research parents and teachers identified a greater alertness in pupils during class time as being a benefit of ATS. This benefit is also identified by Prohk et al. (1996) who contend that physical activity does not only act on an individual level but also positively influences the school climate by increasing social competence within classes leading to improved social behaviour and more satisfaction with school. Furthermore, the DTO (2005) in their pilot study of walking/cycling to school conclude that pupils who choose active modes of transport to school were more alert arriving to class. Participants in this

research also identified independence as a benefit to pupils walking and cycling to school. A benefit identified by Hillman (1999) who argues that travelling to school on foot or by bicycle provides a different learning environment for children through discovery and problem solving in the neighbourhood setting.

Infrastructure – the real barrier?

Even though there are many benefits of ATS one of the main barriers to walking/cycling to school is a lack of infrastructure. Participants in this research identified the environment in which we live and the infrastructure provided as a major concern and a barrier to ATS. Pupils, parents and teachers cited a lack of footpaths, pedestrian crossings, cycle lanes, and public transport as major barriers to walking and cycling to school. Infrastructure and the environment in which we live has also been identified by Beaumont & Pianca (2002) who suggest that the environment in which we live is traditionally best planned for a single mode of travel the car. This narrow transportation planning vision compromises all our travel decisions, but increasingly so for children and their parents/guardians who provide them with transportation to their important activities such as education and social events (Beaumont et al., 2002). In addition, Timperio et al. (2006) conclude that aspects of the social and physical neighbourhood environment may influence children's active commuting to school and suggest that having other children nearby and improving urban design may be important strategies for increasing active commuting to school.

However, it seems that infrastructure did not represent as significant a barrier to walking and cycling to school as people initially thought. The walkability analysis conducted throughout the town of Tramore indicated that infrastructure within the town was sufficient for walking with some improvement necessary. Furthermore, increases in ATS were seen without any infrastructural changes to the neighbourhood. Lumsdon et al. (1999) suggest that infrastructure for walking on its own may not be sufficient to halt or even stabilise a decline in walking. Furthermore, the DTO (2005) in their pilot study regarding ATS conclude that the focus on large packages of infrastructural measures were both expensive and premature. It was only when the study moved to assisting school communities develop management strategies such as walking buses, cycle promotion, bus promotion, car sharing and drop-off management, that any real changes in school

travel patterns began to occur. In addition, Ahlport, Linnan, Baughan, Evenson, and Ward (2008), who examined the barriers to walking and cycling to school conclude that a supportive environment is a necessary but insufficient condition to increase ATS and suggest that initiatives to increase active school travel may need to include multiple levels of interventions to be effective (Ahlport et al., 2008). Furthermore, McMillan (2006) conclude that urban form is important but not the sole factor that influences school travel mode choice.

As mentioned previously participants expressed a lack of infrastructure as a major concern and a barrier to ATS. However, the walkability analysis of the town of Tramore showed that there was sufficient infrastructure favourable to walking and cycling. In addition, the STP did not make any infrastructural changes within the community, yet increases in ATS were seen. Hence, it may be reasonable to suggest that infrastructure does not represent a significant barrier to ATS.

Safety

Infrastructure did not appear as the only concern relating to walking/cycling to school. The safety of pupils walking/cycling to school was identified throughout the research as being one of the main barriers to ATS, a concern mainly expressed by parents. Sonkin, Edwards, Roberts and Green (2006) suggest that road danger is a strong disincentive to active transport. In addition, when Hillman (2000) enquired into parent's attitudes on the subject of safety, he found that the greatest concern was the risk of children being harmed by a motor vehicle. Road safety was also identified as a major concern by parents of children walking and cycling to school in a study by Davison & Lawson (2006).

Sonkin et al. (2006) suggest that one of the main reason for child casualties is that children as pedestrians have trouble coping with traffic and are particularly vulnerable to injury or death by car. Furthermore, the high proportion of such accidents occurring near schools reflects the high volume of traffic related to cars dropping off/picking up children (Sonkin et al., 2006). While parents attempt to ensure the safety of their children on journeys to school by driving them, the ensuing traffic creates localised traffic hazards near schools, making it even less safe for children who choose to walk or cycle (Sonkin et al., 2006). Furthermore, Sonkin et al. (2006) suggest that the conditions are set for a vicious circle of rising road danger

leading to more children being driven which increases traffic volumes adding further to road danger. Mullan (2003) also suggests that parent's concerned about road safety, sense a need to chauffeur their children, but the subsequent increase in traffic volume accentuates road safety fears thus creating a "downward spiral of fear". However, Sonkin et al. (2006) contend that a virtuous circle is possible, in which addressing the higher risks of active transport could encourage more cycling and walking, and thus potentially further reduce road danger.

It is reasonable to suggest that in this research parents fearful of their child's safety were associated with that child not walking/cycling to school. However, after the observational and walkability analysis one may suggest that this is a perception in the minds of fearful parents and does not represent actual reality. In light of the evidence one may suggest that the risk of a pedestrian being hurt or even killed in an accident involving a car is extremely low and this perception should not be allowed to discourage parents allowing pupils walk/cycle to school as the benefits far outweigh the possible hazards of children independently actively commuting to school.

Body Image

Safety is not the only factor associated with children being driven to school. Throughout this research a great number of pupils regarded body image concerns as a barrier to walking/cycling to school. Cycling was generally seen as more suitable for boys with many students suggesting that the wearing of helmets was "uncool". All these factors resulted in no pupil cycling to school. In fact cycling interventions were taken out of the STP, as I believed it would jeopardise the whole project. McKenzie (2006) suggests that many people feel motivated to comply with their perception of how society expects them to look and behave. Not meeting these expectations frequently places people in a state of conflict that results in reduced self-esteem and leads to an unhealthy way of life (McKenzie, 2006). Alleyne (2003) suggests that self-esteem is defined by the degree of worth and competence that we attribute to ourselves. Through physical activity, we may enhance our self-esteem by having a positive image of our bodies and the physical skills and abilities that we develop (Alleyne, 2003). Alleyne (2003) further suggests that we feel positive self worth through the recognition that we receive from family and friends and the social relationships that develop as a result of our involvement in physical activity.

Research by Strauss, Rodzilsky, Burack & Colin (2001) regarding the psychosocial correlates of physical activity in children, also contend that increased levels of physical activity are an important component in the development of self-esteem in children. Whitehead and Biddle (2008) propose that to a large extent adolescent girls physical activity participation is affected by social influences and perceived societal norms. Furthermore, Whitehead et al. (2008) suggest that changing priorities throughout adolescence means that physical activity is deprioritised, with many girls stating that they cannot be bothered to take part. Interestingly, Tremblay, Inman, and Willms (2000) suggest that self-esteem tends to decline for many youth, particularly for females, during adolescence. The findings of their study suggest that participation in physical activities may help some youth traverse this difficult period (Tremblay et al., 2000).

Furthermore, McMillan (2006) argues that gender does affect school travel for example boys are more likely to be allowed to travel actively to school than girls. Whitehead et al. (2008) also suggest that the social construction of girl's identities as endangered or needing protection is inhibiting to them and suggests that this perception only serves to limit girls travel and their independence. Interestingly, McMillan (2006) suggests that an active parent can change the influence of gender on the mode choice to school. McMillan (2006) argues that an active parent increases the likelihood that female children will walk/cycle to school.

Central to the concept of body image as a factor influencing walking/cycling to school is a program run by Sustrans in the UK. Sustrans are currently implementing a program called Beauty and the Bike to help secondary school girls overcome the negative images they have of cycling and to inspire and empower girls to take up cycling to school (Osborne, 2007). Its main aim is to challenge girl's inhibitions and to encourage and celebrate their efforts to travel in a way that is good for their health and the environment. Osborne (2007) suggests that

“The sorts of reasons that girls give for not wanting to cycle to school include, not wanting to be seen wearing a helmet, not wanting to “get messed up”, worrying that boys will laugh at them if they fall off, worrying that they will get hot and sweaty. Girls also have concerns about cycling with traffic and are often unaware of the local traffic-free routes”. p.2

In light of the evidence presented throughout this research one may suggest that ATS has the potential to improve self-esteem especially in girls as they grow in confidence with their physical abilities.

Stranger Danger

Whether well-founded or based on misconception, parental fears of their child's personal security play a significant role in curtailing children's independent travel (Morris & Richardson, 1996; Hillman, 1997). Results from this research suggest that the main reasons why children do not walk or cycle to school is parental concerns surrounding the possibility of approaches by strangers, bullying and the presence of gangs. Safety may be considered a complex concept and may include many components such as harm from strangers ("stranger danger"), personal injury and bullying (Carver, Timperio & Crawford, 2008). Carver et al. (2008) argues that "stranger danger" is clearly a major concern for parents and it has many dimensions such as unwelcome approaches from a stranger, abduction, molestation or even murder and perpetrators can include adults, teenagers, or older children. Carver et al. (2008) argues that this fear exists even though evidence suggests that assault is less likely to be inflicted by a stranger. Understandably, parents generally place a greater weight on personal safety, a risk that may be perceived as having more severe consequences for a child (Morris et al., 2001).

It has been reported that parents view the outcome of abduction or assault as being vastly more serious than the consequence of the more common car accident (Godfrey Mazzella, Cabera & Day, 1998). Research by Godfrey et al. (1998) concluded that even though the probability of a car accident was much higher, concern over personal security was the most popular reason given by parents for driving their kids to school on a regular basis. Godfrey et al. (1998) suggested that the wide coverage given in the local and regional media to child abductions and molestations was the main reason behind this perception, and questioned the provision of necessary information without causing unnecessary alarm. Interestingly, Hillman (2000) also identifies the media as playing an influential role in these perceived fears by parents and suggests that when these rare events do occur, they are magnified by newspaper headlines, radio and on television, followed by coverage of tracking the attacker down and coverage of the court case etc. As a result this has led to more of

children's walking hours being spent indoors and under the supervision of their parents (Hillman, 2000).

Furthermore, Hillman (2000) argues that this risk to personal safety must be seen in perspective and suggests that children are far more likely to be killed by their parents and people they know rather than strangers. Interestingly, the campaigns of Stranger Danger and Kidscape's Yell, Run and Tell in the UK imply that any person a child does not know may be an abductor, molester or rapist (Hillman, 2000). Therefore children should not talk to strangers and as a result will know fewer adults and in turn become distrustful if people they do not know speak to them (Hillman, 2000). Such campaigns may be terrifying children especially when it comes to people they do not know and as a result children themselves will not want to travel independently from their parents or even play in the streets on their own with friends.

However, Valentine and McKendrick (1997) suggest that parents and children often hold conflicting views regarding children's abilities to remain safe in public places when unaccompanied by an adult. Valentine et al. (1997) further suggest that this may prompt regular renegotiation of parental rules governing their children's independent mobility according to age, maturity and demonstrated ability to avoid danger in public. Additionally, the DTO (2005) concluded that secondary school pupils did not consider safety a major issue and suggested however it may be a prime reason as to why their parents drive them to school. This is also true for this research. Throughout the results parents expressed concerns regarding bullying, gangs and fear of assault, however, the majority of pupils did not express these concerns. It may be reasonable to suggest that parents hold the most control over their child's travel mode to school and fearful parents are less likely to be associated with their child walking/cycling to school.

Thompson (2009) suggests that parents face a real conundrum where they have to weigh up granting more freedom and independence with social and community expectations about them being a good parent. Thompson (2009) argues that one of the biggest barriers to children's independent mobility is the peer pressure exerted on parents by other parents. In addition, Thompson (2009) argues that although many parents understand the need for and actively encourage independent mobility, unless there is a collective response this decision will be undermined by the negative

responses of other parents. In relation to parental concerns about neighbourhood safety, Tranter and Pawson (2001) also describe parent’s vulnerability to “social traps”. Additionally, Carver et al. (2008) contend that parents may fall victim to “social traps”, in their desire to be considered as responsible parents conforming with the practices of other parents who, for example, drive their children to school and make sure they are accompanied by adults at all times. Essentially, no parent wants to be the first to let his or her child roam freely (Thompson, 2009).

Conceptual Framework

Figure 9: A conceptual framework for the environmental determinants of active travel in children.

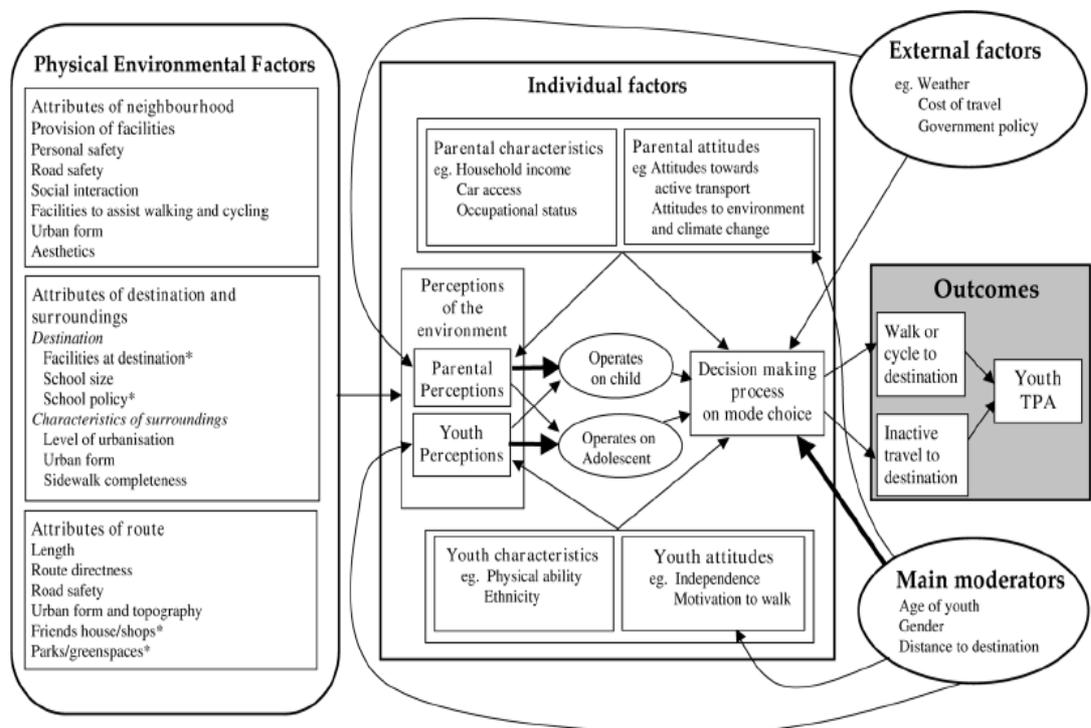


Figure 9. A conceptual framework for the environmental determinants of active travel in children.

Important to consider in the discussion surrounding ATS is a conceptual framework for the environmental determinants of active travel in children. Panter, Jones & Sluijs (2008) highlights three main moderators of behaviour that alter the strength of the association between the physical environment and active travel in children: age, gender and distance travelled. This conceptual framework developed encompasses diverse physical environmental factors including characteristics of the neighbourhood, destination and route environment. Figure 9 suggest that individual, physical environmental and external factors are most likely to influence decision-

making regarding mode of travel, while age, gender and distance will alter the strength and form of the association between those factors and the decision made. This framework fits in with certain results found in this research regarding the influences on travel modes of children and adolescents. These include personal safety of pupils (fear of attack, molestation), road safety (fear of accident with a vehicle), social interaction (with friends on route to school), facilities favourable to walking/cycling (footpaths, cycle lanes) and urban form (presences of hills). Furthermore, this research supports the impact that the attributes of a destination can have on the mode of travel used by children and adolescents. In addition, individual characteristics suggested by Panter et al. (2008) also support the findings of this research in affecting choice of travel modes. However, this conceptual framework does not include body image as a key determinant of ATS as highlighted, body image for adolescent females, travel mode choices, beliefs, incentives and social cognitions. Given the importance of this as a barrier to walking and cycling to school in this study this framework could be expanded to include such concerns regarding body image particularly for adolescent travel mode choices.

The Need for Change

Obesity and overweight are on the increase. In addition, levels of physical activity taken by children on a daily basis are decreasing at an alarming rate. ATS has a big contribution to make to increase levels of health-enhancing physical activity. However, according to Thompson (2009) one of the biggest barriers to walking and cycling is an entrenched preoccupation with cars. This has important implications for children's freedom to travel independently and their social development.

Car Dependency

“Car dependency” is described as the pervasiveness of the car within society a factor that threatens the viability of active travel modes to school (The Transport Studies Unit, 1995). Thompson (2009) suggests that this car culture or car dependence is more than a mode of transport; it is an expression of personal and social status and for some, the ultimate in self-expression. Furthermore, universal car ownership was seen until recently as part of the achievements of contemporary consumer society. In fordist society ‘universal’ car ownership meant that every family had a car; however, in contemporary post-modern society it means that every individual has a car (Wickham & Lohan, 1999). Wickham et al. (1999) identify cars as important to

social life in all advanced societies and suggest that the extent of car dependency is not just the result of the car system itself. It also depends on the public transport system and the form of land use (Wickham et al., 1999). Wickham et al. (1999) contend that the extent to which people can, let alone will, use public transport instead of their car depends on the form and level of transport provision, and is shaped by the extent to which housing and employment are separated and how they are located relative to each other. Thompson (2009) suggests that the impact of decentralisation of services, suburbanisation and the resultant suburban sprawl has meant that there has been a significant increase in road traffic and car-dependent lifestyles. As a result people are more likely to be commuting long distances to and from employment and to access essential services (Thompson, 2009).

As identified in previous chapters a mixed-use neighbourhood would include not just homes but also shops, offices, parks and other land uses. Land use mix, especially the close proximity of shopping, work and other non-residential land use to housing, appears related to greater walking and cycling among residents. However, in modern suburbs, different land uses are purposefully separated, so it may be practically impossible to walk from one's home to the nearest shopping centre or place of employment (Saelens et al., 2003). Furthermore, Knockelman (1997) Hanson et al. (1987) found that closer proximity or accessibility of jobs and services is associated with more walking and cycling.

As cars take over the world outside the house, it becomes less an area for public sociability - the key characteristic of city life (Wickham et al., 1999). It is however clear that since cities are designed for those with cars those who are too young or too old to drive are excluded. Conventional policies in road safety of course exacerbate this situation by segregating cars and pedestrians and by training children to learn that cars are dangerous (Wickham et al., 1999).

Furthermore, Wickham et al. (1999) suggests that children are becoming increasingly dependent on the car. This is occurring because of the complexity of modern life and the resulting shortage of time, which often means that a child is taken to school by car, sometimes as part of a longer trip. Wickham et al. (1999) argues that this increasing car use by children has several implications: children lose opportunities to gain road-based skills and independence from their parents, they lose some social

opportunities, parental time is spent taking children by car, there is extra traffic on the road, particularly during the morning peak, children will have a reduction in their physical activity, which has health implications and they may grow up with little or no experience of using alternatives to the car. Thompson (2009) argues that if there were more children in the streets as pedestrians it would alleviate the impact of car culture and “car dependency” in getting children to and from school. Not only is active transport among children good for the environment, the presence of children is also an effective way of breaking down the natural reserve between adults; streets become more interesting, more liveable and more communal places.

Restricted Freedom

Even though it is suggested that ATS positively affects a child’s physical and psychological well being, as well as benefiting the school and community many children today are still being chauffeured to and from school by car. This restricting freedom of children today has decreased the levels of children walking and cycling to school. Hillman (2000) suggests that society has attached such a high value to maximising the freedom of adults, much of it through the medium of car ownership, that the wider social effects have been overlooked. The increase in car use has resulted in heightened levels of danger and a reduction in the presence of people out and about the street (Hillman, 2000). Hillman (2000) argues that this has led to a “double whammy” for children in that streets are too dangerous to play in and there are fewer adults about to provide a supervisory role for younger people. Furthermore, the later age at which children are allowed out on their own and the consequent form of imprisonment within the home has entailed less and less physical activity and socialising (Hillman, 2000). In addition, Carver et al. (2008) suggest that in the developed, highly urbanised, “western world” the “outdoor child” may even be considered an endangered species when compared to previous generations. The sight of children playing in the streets, meeting friends and running errands for parents has become increasingly uncommon.

Karsten (2005) also identifies the concept of the “indoor child” of today, who plays mostly in the confines of the home. Karsten (2005) further identifies the “backseat generation” who are chauffeured regularly to structured activities, supervised by adults. Sustrans (2009) has also highlighted the concerns over a generation of “cotton-wool” kids who are not allowed to cycle or play outside and consequently have little ability to assess risk when they are older or to even know their own

neighbourhood. Sustrans (2009) suggests that restricting young people's independence and mobility not only deprives them of the freedoms enjoyed by previous generations, such as being allowed to play outside and visit friends on their own, but will also have potentially serious impacts on the physical health and mental development of future generations. Interestingly, Gill (2007) suggests that as a society we need to embrace a philosophy of a resilient child by valuing our children's ability to recover from adverse outcomes such as accidents, injuries, failure, conflict, abuse, neglect or tragedy. Gill (2008) argues that children need to develop their own coping mechanisms and to devise strategies to do things in their own way. It is only through "the doing" that children become competent in negotiating a vast range of interactions and relationships, including how to respond to peer pressures as well as decisions about who to trust and the extent of that trust (Gill, 2008).

Opportunity for Change

As mentioned previously levels of physical activity taken by children on a daily basis are decreasing at an alarming rate. ATS has a big contribution to make to increase levels of health-enhancing physical activity. It is extremely important to educate and empower children during their early school years, encourage discussion with parents and continue the development and implementation of interventions at a national level.

"Start in Primary School"

Throughout the period of data collection it was generally agreed across all participants that younger pupils represented the greatest opportunity to create change in the choice of transportation taken to school. There is considerable evidence for motivational decline across a wide range of behaviours during adolescence (Eccles, Flanagan, Lord, Midgley, Roeser, Yee, 1996). Sallis et al. (1993) also suggests that physical activity decreases over school-aged years at about 2.7% yearly for males and 7.4% per year for females. The greatest opportunity to increase ATS may therefore lie in implementing a program especially for girls during primary school years. However, it is important that these interventions at primary school level make the transition with pupils entering secondary level education. This will ensure that the positive habits of active travel gained at primary level are not lost with changing motivations in life during adolescence. For example, in 2006, Sustrans and the Scottish Health Promoting Schools Unit jointly commissioned a new pilot initiative

to promote active school travel across the primary-secondary transition. This was in response to data showing that walking to school decreases as children move from primary to secondary school and concern that existing transition programmes do not include active travel (Inchley et al., 2007).

“Encourage discussion with parents”

Furthermore, Valentine et al. (1997) suggests that parents and children often hold conflicting views regarding children’s abilities to remain safe in public places when unaccompanied by an adult. As a result Valentine et al. (1997) argues that this may prompt regular renegotiation of parental rules governing their children’s independent mobility according to age, maturity and demonstrated ability to avoid danger in public. It seems that older children have the ability to renegotiate their travel modes with their parents and therefore such discussion between parents and pupils should be encouraged.

“National –level program”

In January 2009 Stella Maris Secondary School was approached by the Green Schools Organisation to implement a school travel theme. This theme would enable Stella Maris retain their green-flag award obtained during the implementation of a previous Green Schools theme. This saw the amalgamation of the STP used in this research with the Green Schools Travel theme. The former became subsumed into the latter resulting in a greater behaviour change seen after this point. This may be due to the penalty of retracting the green-flag from the school if it did not undertake the travel theme might be seen as the motivating factor. To illustrate this point it is important to consider a similar situation at another school in Ireland. A primary school tried to ban cars from the school grounds to reduce congestion and improve safety for children arriving at the school gates, a restriction which was initially resisted at the school (DTO 2005). However, when this traffic restriction was introduced as part of the Green-Schools program in January 2006, it proved a great success. It is possible that the official structure of the organisation with its interdepartmental working group, consisting of representatives from the Departments of Transport, Health, Education and Environment, National Parents Council, public transport operators and Local Authorities can be seen as another motivating factor. As a result The Green School Program should be seen as an important aspect to increase ATS in Ireland for the foreseeable future.

Conclusion

In the space of one generation, children's ability to negotiate and explore their own neighbourhoods has been significantly curtailed (Thompson, 2009). Children are more likely to be confined to their homes and their own ever-shrinking backyards (Thompson, 2009). International studies have shown that the age at which children are allowed to travel without adult supervision has risen. This change has been brought about by a cultural shift in norms rather than any major changes to the physical environment (Thompson, 2009).

Thompson (2009) suggests that much of this attitudinal change has come about as a result of our post-modern world where people in western society have become more adverse to risk. The certainties we took for granted a generation ago no longer apply for many people and in particular children (Thompson, 2009). As a result parents put in place contingency plans to manage and reduce their child's exposure to risk. Thompson (2009) also suggests another factor, which has inhibited children's freedom, has been an increase in volume of traffic in residential streets. Many children are not able to move freely around their communities for fear of being injured or killed by motor vehicles. Children are also discouraged from speaking with adults who are strangers (Thompson, 2009). The result is a disconnection from our communities, where there are fewer familiar faces and interactions (Thompson, 2009).

The pressure to conform to a specific body image within today's society is also impacting greatly on our young adults. Girls are especially exposed to societal norms and expectations, which are restricting them from the world of physical activity and active transportation. Females must be empowered through education, allowing them to grow in confidence with their physical abilities and improve their self-esteem. Initiatives, which support a healthy body image, may be the most influential when used with older pupils, however, it may also be suggested that younger children can benefit from active travel as their self-esteem and confidence grows with the ability to independently actively commute, increasing the levels of females walking and cycling for transportation purposes long into the future. Furthermore, young adults should not be considered as a lost cause regarding the promotion of ATS, as these are the years when pupils can renegotiate their travel

modes with their parents as they become more responsible and have the ability to keep themselves safe in the community.

In addition, Thompson (2009) suggests that children's independent mobility should be viewed as a natural part of their development. It should be regarded like any other skill such as swimming or learning to ride a bicycle, as something that is taught and is undertaken incrementally. The achievement of independent mobility should be assessed according to the capacity and maturity of each individual child. Thompson (2009) also suggests that creating children's independent mobility through active transport requires a pluralistic approach at many levels. From government, which has the capacity to change laws and provide a safe physical environment for children to either walk or cycle, to the endorsement of the general community who accept that children have a right to move freely within public spaces.

Furthermore this research suggests that the provision of large infrastructural packages is not to key to promoting walking/cycling to school as found by the DTO (2005). Supportive measures such as walk to school days, designated drop-off and pick-up points, carpooling etc are more beneficial when aiming to increase ATS. The support of the school community including, teachers, students and parents is critical to create a culture, which encourages independent mobility among children. Also, increased discussion about ATS is necessary to increase levels of ATS. Resulting in a type of "domino effect" where the more that use active transport the more common and socially acceptable it becomes, hence, increasing the levels of ATS further. In addition, parents must be educated about the actual safety dangers of children walking and cycling to school and to the consequences of keeping their children indoors and not allowing them to actively commute to school. Parents must also be made aware of the vicious circle created by this perception of fear where children are driven to school to ensure their safety, causing a greater number of cars on the road and the consequential increase in danger for pedestrians, resulting in further fears by parents and a never ending vicious circle. Furthermore, children must also be educated as to the rules of the road for pedestrians and cyclists to ensure that they have the competencies to independently actively travel to school.

Recommendations

The following are recommendations for the future of ATS listed in no particular order of preference.

- Further research is needed to examine the attitudes of pupils, parents and teacher to ATS. Exploration is needed into the attitudes of adolescent girls regarding cycling to school. Research opportunities also exist surrounding the effect that society and certain social traps are having on parents driving their children to school.
- A standardised questionnaire is needed to explore attitudes to ATS. Future interventions should include the use of repeated measures to determine the change in attitude to walking and cycling to school.
- Walkability Analysis should be used as part of any ATS program to highlight the positive levels of infrastructure currently within our communities and to alleviate any concerns of parents regarding the levels of infrastructure favourable to walking and cycling.
- The involvement of pupils, parents and teachers is an extremely important aspect of the development, implementation and success of a STP. Meetings such as AGM's, Parent Council and Student Council work particularly well when developing a STP and examining attitudes to ATS. Pupil involvement alone is insufficient.
- The development of a STP should be seen as a long-term project and should not be regarded as a quick fix. It is not possible to change the culture of "car dependency" overnight.
- Body image is a huge concern, one that cannot be ignored or ridiculed. Any intervention to increase walking and cycling to school must consider the impact of body image on pupils especially adolescent girls.
- Individuals must take account of their actions and responsibility to change their travel modes. In addition, individual intentions to actively commute should be supported by government policy such as the National Cycling Policy Framework 2009-2020, the first of its kind in this country, planning policy, which considers a mix of land uses and parking charges etc.
- One may debate the inclusion of the wider community in the development and implementation of a STP. How much of the community is genuinely interested in children walking and cycling to school? Does the local shop

keeper care whether or not children walk/cycle to school? This research suggests that the wider community did not want to get involved in the STP. This was seen in the lack of support by An Garda Siochana at the kick-off event in October and also the major dissatisfaction expressed by parents regarding the lack of response from local T.D's to whom a letter was sent to get their support for pedestrian crossings at the school and major junction.

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APPENDICIES

Appendix 1

Pilot Study - Questionnaire for Parents & Teachers.

Active Transport to School

1. What do you feel are the benefits of active transportation to school?

2. What do you feel are the drawbacks of active transportation to school?

3. What environmental changes do you feel are needed to support children walking and biking to school?

4. Do you feel the community in which you live effects the choice of transport to school?

YES

NO

If yes, please explain why?

5. In your opinion do you feel that society in general promotes the use of the car?

YES

NO

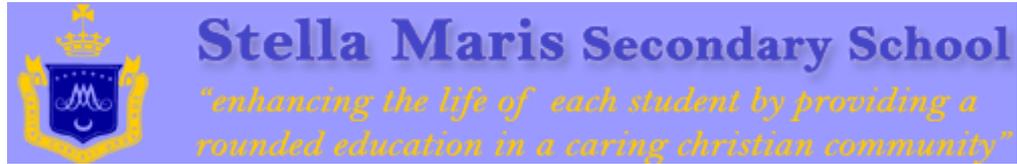
Please explain why?

6. Whose responsibility is it to promote and encourage active transportation?

7. What efforts are needed to promote walking and biking to school by parents and schools?

Appendix 2

Cover Letter



Dear Student,

Members of our school and community have developed a School Travel Plan for Stella Maris Secondary School to encourage pupils to walk and cycle to school. This is a simple policy document concerned with the development of practical guidelines to encourage walking and biking to school. It will outline physical measures such as parking, access restrictions, safety measures such as crossing points and practical measures such as "park & stride". We are also examining the change in attitudes towards walking and biking to school. For the success of the STP we ask students teachers and parents for some information that will help tailor the program to meet the needs of all and address any concerns you may have about future of the plan.

Thank you for participating in this survey.

Sincerely,

Jean Lodge.

Please return completed survey to your student's council representative.

Student
Active-to-School Questionnaire

1. What is the approximate distance from your home to school?

2. How do you get to school most days?

3. What do you feel are the benefits of walking and cycling to school?

4. What concerns do you have about walking and cycling to or from school?

- Crime (stranger danger, gangs, bullying).
- Traffic — too much traffic in neighbourhood.
- Traffic — too much traffic at school.
- Speed — cars drive too fast through the neighbourhood.
- No (or inadequate) footpaths
- No (or inadequate) cycle lanes on the route to school.
- Distance — school is too far away.
- Time — not enough time.
- After-school activities.
- Convenience — it is easier.
- Students do not want to/like to walk or bicycle to school.

Other (please state)

5. What further changes are needed to facilitate walking and cycling to school?

_____ Less traffic.

_____ Bicycle parking

_____ Footpaths

_____ Cycle lanes

_____ Pedestrian crossings

_____ A walk to school group

_____ A cycle to school group

_____ Lighter school bag

Other (please state)

6. What further changes are needed to facilitate walking and cycling to school?

Please state and explain your answer:

Teachers
Active-to-School Questionnaire

1. What do you feel are the benefits of walking and cycling to school?

2. What concerns do you have about pupils walking and cycling to or from school since the development of the School Travel Plan?

- Crime (stranger danger, gangs, bullying).
- Traffic — too much traffic in neighbourhood.
- Traffic — too much traffic at school.
- Speed — cars drive too fast through the neighbourhood.
- No (or inadequate) footpaths
- No (or inadequate) cycle lanes on the route to school.
- Distance — school is too far away.
- Time — not enough time.
- After-school activities.
- Convenience — it is easier.
- Students do not want to/like to walk or bicycle to school.

Other (please state)

3.What further changes are needed to facilitate walking and cycling to school?

Please state and explain your answer:

Parents

Active - to - School Survey

1. How many children do you have attending this school?

2. What is the approximate distance from your home to school?

3. If you are working outside the home is your commute to work linked to the commute to school?

Yes No Occasionally

4. What do you feel are the benefits of walking and cycling to school?

5. What concerns do you have about pupils walking and cycling to or from school since the launch of the School Travel Plan?

Please List:

6. What further changes are needed to facilitate walking and cycling to school?

Please state and explain your answer:

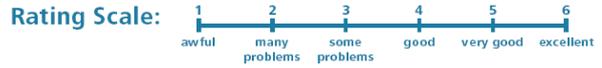
Appendix 3

Walkability Analysis (US Department of Transportation, 2008)

Take a walk and use this checklist to rate your neighborhood's walkability.

How walkable is your community?

Location of walk _____



1. Did you have room to walk?

- Yes
 - Some problems:
 - Sidewalks or paths started and stopped
 - Sidewalks were broken or cracked
 - Sidewalks were blocked with poles, signs, shrubbery, dumpsters, etc.
 - No sidewalks, paths, or shoulders
 - Too much traffic
 - Something else _____
- Locations of problems: _____

Rating: (circle one) _____
1 2 3 4 5 6 _____

2. Was it easy to cross streets?

- Yes
 - Some problems:
 - Road was too wide
 - Traffic signals made us wait too long or did not give us enough time to cross
 - Needed striped crosswalks or traffic signals
 - Parked cars blocked our view of traffic
 - Trees or plants blocked our view of traffic
 - Needed curb ramps or ramps needed repair
 - Something else _____
- Locations of problems: _____

Rating: (circle one) _____
1 2 3 4 5 6 _____

3. Did drivers behave well?

- Yes
 - Some problems: Drivers...
 - Backed out of driveways without looking
 - Did not yield to people crossing the street
 - Turned into people crossing the street
 - Drove too fast
 - Sped up to make it through traffic lights or drove through traffic lights?
 - Something else _____
- Locations of problems: _____

Rating: (circle one) _____
1 2 3 4 5 6 _____

4. Was it easy to follow safety rules?

Could you and your child...

- Yes No Cross at crosswalks or where you could see and be seen by drivers?
 - Yes No Stop and look left, right and then left again before crossing streets?
 - Yes No Walk on sidewalks or shoulders facing traffic where there were no sidewalks?
 - Yes No Cross with the light?
- Locations of problems: _____

Rating: (circle one) _____
1 2 3 4 5 6 _____

5. Was your walk pleasant?

- Yes
 - Some unpleasant things:
 - Needed more grass, flowers, or trees
 - Scary dogs
 - Scary people
 - Not well lighted
 - Dirty, lots of litter or trash
 - Dirty air due to automobile exhaust
 - Something else _____
- Locations of problems: _____

Rating: (circle one) _____
1 2 3 4 5 6 _____

How does your neighborhood stack up?

Add up your ratings and decide.

- 1. _____ 26-30 Celebrate! You have a great neighborhood for walking.
- 2. _____ 21-25 Celebrate a little. Your neighborhood is pretty good.
- 3. _____ 16-20 Okay, but it needs work.
- 4. _____ 11-15 It needs lots of work. You deserve better than that.
- 5. _____ 5-10 It's a disaster for walking!

Total _____

Appendix 4

Presentation

Walking & Cycling to School:



Walking and Cycling to School: Presentation Outline

- What is the problem?
- Why is Walking and Cycling to School Important?
- Results from data
- Stella Maris School Travel Plan

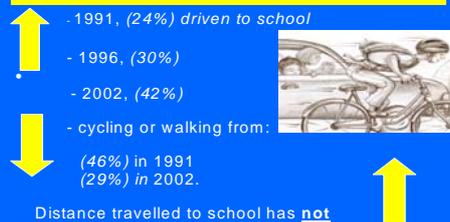


Walking and Cycling to School: Presentation Outline

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Travel to School



Health Risks

- ↑ **Obesity**
- 1 in 5 = overweight
- 1 in 20 = obese
- ↑ **Pollution**
- exposure in slow traffic
- ↑ **Congestion**
- 90% morning trips = school journey



Benefits

- Fewer child casualties and road accidents
- Healthier lifestyles
- Safer roads for all
- Less pollution and congestion
- Greater independence and freedom
- Physically active = better students
- Development of the 'whole student'



(Sustrans, Safe Routes to School, retrieved from www.saferoutestoschools.org.uk/index.php?f=benefits.htm)

Results from Data

- Transport to and from school scored 18 points out of 30 on the walkability scale
- 20% of pupils walk to school.
- 63% travel by car.
- Pupils living outside Tramore use the bus as the main form of transport to school.
- No pupil currently cycle to or from school.

- Large numbers are collected for lunch & return by car after lunch.



Questionnaires:

- parents: heavy school bags, poor weather, time constraints, commute to work and lack of pedestrian crossings play a large part in the choice of transport to school.
- teachers: continued learning of the safe cross code through second level.

Transport Problems

- Traffic congestion.
- Lack of pedestrian crossings.
- Footpath obstructed and road narrowed
- Heavy weight of school bags.



Our School Travel Plan 2008

- Developed in consultation with students, parents and teachers.
- Aims:
 - ↓ the use of the car.
 - ↑ rates of walking to school.



Objectives

- ↓ Congestion at both school entrances.
- ↓ The weight of school bags.
- Educate and encourage pupils to walk to school.
- Create community awareness



Measures

- Parking restrictions
- Drop-off & Pick up point.
- End of day reminder by teachers
- Poster campaign to raise awareness and encourage pupils to walk to school.
- Classroom information sessions.
- Kick off event 8th October 2008
- Garda assistance.
- Posters for placement around the community detailing Stella Maris Walk to School Campaign.



Details

- Drop off and pick up point = church car park.
- Parking restrictions:
 - 8.30-9.15am 3.45-4.15pm Monday-Thursday & Friday eve 3.00-3.35pm.
- Cones indicate non-parking zones.
- Teachers:
 - will be asked to remind all pupils to ensure they are using their lockers.
- Poster campaign:
 - organised with first year art classes to promote walking to school throughout the school.
- Information sessions:
 - For all classes.



- The kick off event: commences @ 8.15a.m 8th October
 - coincide with International Walk to School month, October 2008.
 - Beat FM & other media will provide coverage
 - Garda will show their presence at the main junction and other areas.
- Poster competition will be held with the winning poster printed for display around the community

Comments????



Appendix 5

Stella Maris School Travel Plan

Results of Data:

- Transport to and from school scored 18 points out of 30 on the walkability scale. This shows that the walkability of the town is sufficient but could use some improvements.
- A hands up survey revealed that 32% of pupils walk to school with 64% travelling by car.
- Pupils living outside Tramore generally use the bus as transport to school. No pupils currently cycle to or from school.
- A three-day observational survey during morning, lunchtime and evening drop off and pick up at the school supported the results of the hands up survey.
- The observation survey highlighted the fact that a large number of students are collected by car for lunch and return by car after lunch.
- The questionnaires completed by parents revealed heavy school bags, poor weather, time constraints, lack of pedestrian crossings & the commute to work as factors influencing the choice of transport to school.
- Questionnaires completed by teachers indicated the need to encourage parents to allow their children walk to school and the need for continued learning of the safe cross code through second level.

Travel and Transport Problems:

- Traffic congestion around the school at drop-off and pick-up times.
- Lack of pedestrian crossings at both entrances.
- Footpath obstructed and road narrowed by student drivers parking on adjacent footpaths.
- Heavy weight of school bags.

School Travel Plan 2008

A school travel plan has been developed in consultation with students, parents and teachers.

Aims:

1. Decrease the use of the car as the main transportation mode to and from school.
2. Increase rates of walking to school.

Objectives:

- Decrease congestion at both school entrances.
- Decrease the weight of school bags.
- Engage with parents and pupils through education and encourage pupils to walk to school.
- Create community awareness of the school travel plan.

Measures:

- Designated drop off and pick up point for pupils away from school entrance gate.
- Parking restrictions at school front entrance during peak hours.
- End of day reminder by teachers regarding the use of lockers to ensure bags are lighter for the walk home.
- Campaigns to raise awareness and encourage pupils to walk to school i.e. (WOW) Walk on Wednesday & Feet First Fridays.
- Classroom information sessions.
- Kick off event coinciding with the launch of International Walk to School Month on October 8th.
- Garda presence at the kick-off event.
- Creation of posters for placement around the community detailing Stella Maris Walk to School campaign.
- Suggested one-way traffic system.
- Designated drop off and pick up point for pupils will be the church car park adjacent to the Tramore Credit Union. This area is large in size and is serviced by a network of pedestrian crossings.
- Parking restrictions will take place around the front school entrance between the hours of 8.45-9.00am 3.45-4.00pm Monday-Thursday & Friday evening 3.10-3.25pm. Cones will mark the non-parking zones and will be put in place & removed at the designated times. These will reinforce the presence of double yellow lines at the school entrance.

- Teachers will be asked to remind all pupils to ensure they are using their lockers for the storage of books every evening before class ends.
- With the help of the schools art teacher a poster campaign will be organised with first year art classes to promote walking to school throughout the school. Posters will be positioned around the school as a reminder to pupils. “WOW” days will also be promoted along with “Feet First Fridays”.
- Information sessions will be held for all classes to inform, educate and support pupils to walk to school.
- The kick off event will be the first day the plan will come into action 8th October. This day will coincide with the launch of International Walk to School month, October 2008. The main area for the kick off event will be the designated drop off point from 8.15a.m. Pupils will depart the drop-off point at 8.45 for the walk to school and will return to the drop-off point when school ends at 4.00pm. This will remain the main drop-off point for pupils for the foreseeable future with its suitability reassessed on an ongoing basis. Pupils will walk from this point at their own discretion & are not required to wait for other pupils once the kick-off day has finished.
- Beat FM will provide coverage of the event.
- Garda presence will ensure the safety of the pupils for their first day of the plan and will join the pupils on their walk to school. Garda will be asked to be present at the main junction for pupils crossing the road.
- A poster competition will be held in the school with the winning poster printed for display around the community to inform community members of the school travel plan.

Parents travelling to the school are asked to do so from the Glor na Mara/C.B.S direction, facilitating a suggested one-way system on the road approaching the Stella Maris School to help ease congestion.