Investigating active travel to primary school in Ireland

Natasha Daniels[1], Colette Kelly[1], Michal Molcho[1], Jane Sixsmith[1], Molly Byrne[2] and Saoirse Nic Gabhainn[1]

[1] Health Promotion Research Centre, National University of Ireland Galway, Galway, Ireland

[2] School of Psychology, National University of Ireland Galway, Galway, Ireland

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ABSTRACT

Purpose: Active travel to school, by walking or cycling, can positively influence children's health and increase physical activity. This study investigates the context and promoters and barriers of active travel, and the required actions and actors that need to be involved to address each of these.

Design: Both quantitative and participative research methodologies were employed. The sample consisted of 73 children aged between 11 and 13 years from four primary schools in the West of Ireland. A self-completion questionnaire was followed by a participative protocol conducted with the class groups.

Findings: Overall 30.1% of children reported that they actively travelled to school. A greater proportion of children from urban and disadvantaged schools actively travelled. Proximity to the school was the most frequently reported promoter and barrier. The children identified many actors that need to be involved to eliminate the barriers and enact the promoters of active travel to school. They also highlighted the need for a multi-sectorial approach to improve active travel rates in Ireland.

Originality: This study holds potential value in addressing the continued decline in active travel to school in Ireland as it shares a new perspective on the issue; that of the children. Adopting a participative approach allowed the children to participate in groups and develop the data themselves. The children confirmed that they have a relevant and valuable understanding of the process necessary to address active travel to school as a public health issue in Ireland.

Keywords: Health, youth, travel, Ireland.

Article Classification: Research paper

INTRODUCTION

Studies in Australia, Canada, the USA and Europe have identified that children's active travel to school can increase daily levels of physical activity (Cooper *et al*., 2005; Schofield *et al*., 2005; Saksvig *et al*., 2007; Davison *et al*., 2008; McDonald, 2008; van Sluijs *et al*., 2009; Faulkner *et al*., 2009; Panter *et al*., 2010; Leslie *et al*., 2010; O'Loghlen *et al*., 2011) and may help children meet daily physical activity recommendations. Previously it has been argued that increasing levels of physical activity can positively contribute to children's physical health (Cooper *et al*., 2003; Biddle *et al*., 2004), and mental health and social development (Biddle *et al*., 1998; Scottish Executive Central Research Unit, 2002; National Heart Alliance, 2010).

In recent years, rates of walking and cycling to school have continued to decrease (Murtagh *et al*., 2011; National Heart Alliance, 2010; Hume *et al*., 2009 McMillan, 2007; WHO 2005b; CSO 2002). Parallel to this trend, childhood obesity has been recognised as a global epidemic (WHO, 2005a), with high prevalence in the USA, Europe and Ireland (WHO, 2005a; WHO 2005b; Evans *et al*., 2010). From a public health perspective increasing energy expenditure by facilitating daily active travel to school may help to combat the global rise in obesity and many of the related chronic health conditions (O'Loghlen *et al*., 2011).

Previous research has identified a range of factors that are associated with active travel to school including individual, family, school, social-environmental and physical environmental. Distance from school is a key determinant of travel mode both as a promoter if the distance is short and as a

barrier if it is perceived as long (Timperio *et al*., 2004; Bere *et al*., 2008; Davison *et al*., 2008; Ester *et al*., 2009). Lack of traffic lights, safe crossings (Timperio *et al*., 2006) and pedestrian walkways (Kerr *at al*., 2006) have been identified as barriers to active travel in previous research. The absence of steep climbs or falls are positively associated with a child actively travelling to school (Timperio *et al*., 2006), as is parents' preferred mode of travel when they were in school. Indeed, if a parent actively travelled to school when they were a child this increases the likelihood of their children doing so (Inchley and Cuthbert, 2007; Davison *et al*., 2008). On the other hand, lack of an adequate road infrastructure has been identified as a barrier to active travel (Timperio *et al*., 2006; Carver *et al*., 2008; Kerr *et al*., 2006).

Ireland has recently recognised the importance of promoting active travel to school in the National Guidelines on Physical Activity for Ireland (Department of Health and Children, 2009; Department of Health, 2013) and the National Cycle Policy Framework (Department for Transport, 2009). In Ireland research on active travel to school has primarily focused on post-primary school children (Nelson *et al*., 2008; Dublin Transportation Office, 2007). Both of these studies found that approximately one third of children actively travel to school. The first Irish study to include primary school children was carried out by the Dublin Transportation Office (2007) which reported that 39% of the participants actively travelled to school. Another Irish study (Murtagh et al., 2011), using both a short questionnaire and a pedometer to count steps taken was carried out with primary school children in 2011. This study found that 36.4% walked to school and just one child cycled which shows no change in active travel patterns in Ireland in recent years.

The majority of research on active travel across Europe, and all Irish studies, have employed quantitative methods, with few using multiple methods and none that we found using participative methods. Following the United Nations Convention on the Rights of a Child (1989) there is growing literature on the importance of children's participation in research affecting their lives

(Hart, 1992; de Winter *et al*., 1997; Alderson, 2001; Shier, 2001; Sinclair, 2004). Two principles of health promotion are also central to participative research, namely empowerment and participation (O'Higgins and Nic Gabhainn, 2010), giving the participants increased power over the research process. Participative research also enables participants to share their views and opinions with researchers and creates the possibility for young people's voices to be heard by those in power without adult interpretations (*ibid*). Using participative research with children in the planning and management of their living environment has been found to have health promoting value (Hart, 1992; Alderson, 2001).

This study adopts a participative research methodology with a complementary quantitative component, in an attempt to couple a health promoting process with health promotion research. This is one of the first studies in Ireland to involve primary school children outside the Eastern, more urbanised region of Ireland, allowing representation from children from both urban and rural areas. It is also the first study in Ireland, on this topic, to include children from designated disadvantaged and non-disadvantaged schools. It facilitates, for the first time, primary school children to develop data identifying the promoters and barriers to active travel to school. This study has two novel elements; it asks primary school children to identify what actions are needed to remove the barriers and enact the promoters of active travel they have identified, and it facilitates the children to identify who needs to be involved in the process of change towards increasing active travel to school in Ireland.

METHODS

A cross-sectional design coupling qualitative/participative and quantitative research was employed. The study was carried out over the month of May 2009 using a convenience quota sample. Four schools were identified from a Department of Education list of schools in the West of Ireland based on differences in location and socio-economic status. This resulted in the selection of

schools with the following characteristics: one urban non-disadvantaged, one urban disadvantaged, one rural non-disadvantaged and one rural disadvantaged. Disadvantaged schools in Ireland are schools that receive support to tackle educational disadvantage under the School Support Programme, a core element of Delivering Equity of Opportunity in Schools (DEIS) (Department of Education and Science, 2005). Four schools meeting the sampling criteria were invited to participate in the research and all four agreed to do so, they were 2 mixed schools, one all-boys and one all-girls school. In each school all children from sixth class only were invited to participate in the research, with an age range of 11 to 13 years. Active consent to participate was obtained from all schools, parents of the children who took part, and the children. Consent was obtained from 73 parents out of a total of 95. Each workshop began with administering the questionnaires and was followed directly by the participative research. Both the participative/ qualitative and the quantitative methodologies were carried out in a single session for practical reasons and as requested by participating schools.

Quantitative research

A self-report questionnaire adapted from a study on active travel among children in Scotland was adopted (Inchley and Cuthbert, 2007), with minor alterations to make it relevant to the Irish context. These alterations included an extra response option ‘with my parents’ to the question ‘who do you usually travel to/from school with?’ and the addition of the question on reasons for walking or cycling to school and the response options ‘I like the fresh air’, ‘I get exercise doing this, ‘it helps the environment’ and ‘I get to school quicker’. It was piloted before use with a convenience sample of eight children. The questionnaires were administered and completed in class in the presence of two research staff. Questionnaires were collected prior to the next stage of data collection. All quantitative data were entered into SPSS version 15.0 (SPSS Inc., Chicago, IL, USA). Associations between active travel to school and the outcome variables were assessed using Chi-squared test. The questions included in the questionnaire are listed in Table 1.

[INSERT: Table 1: Questions in the questionnaire]

Participative Research

Consultation with young people on participative research processes informed the development of the qualitative/participative research protocol (O'Higgins and Nic Gabhainn, 2010). To facilitate participation, the researchers played games with the children at both the beginning and the end of the session. Ground rules were developed by the children with the researchers and agreed for each session. Children were asked to consider and answer two questions *"what helps you to cycle or walk to school?"* and *"what stops you from cycling or walking to school?"* All responses were recorded on flipcharts by the researchers. Each class group was then divided into 4 - 5 sub-groups with 4 - 5 children in each group. Approximately half of the sub-groups were asked to work from the *"what helps you cycle or walk to school"* flipchart sheet and the other half from the *"what stops you from cycling or walking to school"* flipchart sheet. Each group was given a pre-prepared web illustration (*Figure 1*) on an A1 sheet of paper and marker pens. They were invited to do three things with their data:

1. On the inner most level to write the eight most important things that influence their active travel to/from school from the promoters or barriers.
2. On the next level to identify what they think needs to happen to enact or prevent the promoters or barriers respectively.
3. In the outer most level to state who or what can make this change happen.

[INSERT: Figure 1: Example of a web illustration]

Once data collection from all four schools was complete, content analysis was conducted on the text provided in the inner circles of the developed webs; the promoters and barriers to active travel.

The promoters were grouped into categories based on being the same or very similar to other promoters identified by other groups (e.g., 'live far away' and 'near school' were categorised as 'distance', 'someone to walk with' and 'company' were categorised as 'company') and the same process was carried out with the identified barriers and actors. It was the intention of the researchers to keep the qualitative data obtained from the children as close as possible to its original form and due to this only simple analysis was conducted for presentation purposes. It was not intended for the researchers to make assumptions about the data provided directly by the children.

RESULTS

The sample comprised of 73 children, 39.7% (*n=29*) boys and 60.3% (*n=44*) girls; 41.1% (*n=30*) were children from urban schools and 58.9% (*n=43*) children from rural schools with 41.1% (*n=30*) from disadvantaged schools and 58.9% (*n=43*) from non-disadvantaged schools. The age range was from 11 to 13 years, with 79.5% of the children aged 12 years old.

[INSERT: Table 2: Children's travel patterns to school]

Non-active travel emerged as the primary method of travel in this study (69.9%). Table 2 shows the percentage of children that travelled by walking, cycling, car or bus by location, disadvantaged status and gender. Half of the children (54.5%) who reported they actively travelled do so 4-5 days per week ($p < 0.001$). For most children, travel time was between 5 and 15 minutes. Of the children who did not actively travel to school 25.5% reported they travelled to school in less than 5 minutes and 58.8% travel to school in 5 – 15 minutes. Most children (86.3%) reported owning a bicycle. Table 3 shows the percentage of children who reported some promoters and barriers to active travel to school by location, disadvantaged status and mode of travel. Percentages relate to those who reported that they "agree a little" or "agree a lot" with these as promoters or barriers.

[INSERT: Table 3: Promoters and barriers of active travel to school]

None of the active travellers reported travelling to school with parents, compared to children who do not travel actively (72.5%) ($p < 0.01$), however, they were more likely to travel to school with friends compared to children who do not travel actively (59.1% vs. 9.8%) ($p < 0.001$). Children from rural schools were more likely to travel to school with their parents compared to children from urban schools (62.8% vs. 33.3%) ($p < 0.05$). Children from disadvantaged schools were more likely to travel to school with friends compared to children from non-disadvantaged schools (36.7% vs. 16.3%) ($p < 0.05$). Active travellers were more likely to report that they enjoyed walking compared to children who do not actively travel (86.4% vs. 48.0%) ($p < 0.01$). Fewer boys reported that they enjoyed walking compared to girls (41.1% vs. 72.1%) ($p < 0.01$). Boys were more likely to be physically active 7 or more times a week compared to girls (65.5% vs. 40.9%) ($p < 0.05$). There was no significant gender difference in active travel to school. Table 4 presents findings on who the children perceive decided how they travel to school.

[INSERT: *Table 4: Who decided how children travel to school]*

Across the four participating schools, 15 web illustrations were completed. An example is included in figure 2 on promoters to active travel. The illustrations have three concentric circles where the inner circle contains the factors that children identified to influence active transport to and from school, the middle circle contains the actions that children suggested be taken to address the influencing factors and the outer circle contains the people that the children identified could help in executing the actions.

[INSERT: Figure 2: School 1(rural non-disadvantaged) promoters]

In total the children identified 64 promoters and 56 barriers in the participative research element of this study. These barriers and promoters were categorised and resulted in eight categories of promoters and eleven categories of barriers (see tables 5 and 6 below). The actors identified by participating children in the outer circle of the webs were collapsed into 8 for ease of comparison across categories of promoters and barriers (i.e. builders, community, government, health professionals, ourselves, parents, school, weatherman). Tables 5 and 6 below display the categorised data. The actions presented are those identified by the children in their own words.

[INSERT: *Table 5: Categorised Promoters*]

[INSERT: *Table 6: Categorised Barriers*]

In the children's webs diagrams, footpaths and wider footpaths were identified as promoters of active transport by children in both urban schools and one rural school. Owning a bicycle was identified by children in both disadvantaged schools and one urban school and *"having a place for bike if cycle"* was identified by children in both rural schools. Less traffic, living near, better visibility on the roads, safer roads and helping the environment were five promoters identified by children from rural schools. The need for a 'Lollipop lady' (an adult to help children to cross the road who carries a round sign to stop traffic) was reported by children in both urban schools. "*Good shoes*" were identified as a promoter by children in the rural disadvantaged school, *"buy some shoes"* and having company on the journey, *"ask someone to walk with you' and 'walk with people who live near"* by children from both rural and one urban disadvantaged school.

Living far away was identified as a barrier by children in both rural schools and one urban school. Having no paths, bad weather, fast cars on the roads and being lazy, sick or disabled were identified by children in 3 schools as barriers. Strangers or kidnappers and accidents were also

reported as barriers by children in both rural schools and they suggested *"set up a community alert"* and *"self-defence classes"* to address this. Children from one disadvantaged school identified having no bicycle rack at school as a barrier, *"buy an area to leave bikes"*. The children had many suggestions to change the 'lifestyle' barrier they identified to active travel to school. These included; *"eat healthy"*, *"be more active"* and *"get an alarm clock"*. To combat the bad weather identified as a barrier they suggested; *"bring an umbrella"* and *"wear a coat or jacket"*. The web diagrams also identified street lights, safe crossings, traffic lights, cycle lanes and an adult to help cross the road as promoters of active travel.

Concern for the environment was identified as a promoter of active travel in the children's web diagrams; however this was not evident from the questionnaire data collected. The actions the children identified included walk and cycle, use the car less and modelling walking for others. Good physical health was identified as a promoter, and lifestyle and sickness as barriers in the web diagrams, with actions suggested to increase this including being fit and active, eating healthily, and not being lazy.

Having equipment also emerged as a promoter of active travel; *"buy a bike"*, *"get an ipod"* and *"can't cycle in a dress as it gets caught"*, highlighting the need for suitable school clothes for girls in particular. Other suggestions for equipment to promote active travel emerged from the web diagrams (although not from the questionnaire data): they included bikes, portable music players (MP3s), suitable shoes and a suitable uniform to actively travel to school. In relation to overcoming barriers to active travel children identified the following actions: reduce speed limits; repair ('fix') the roads; have bins on the streets; construct a bypass; make roads bigger; complain to the roads council; and petition for investment.

School infrastructure supportive of active travel to school was identified as a promoter in the web diagrams, extending the findings of the questionnaire. Two actions were identified to address this, namely for pupils to have a place to leave their bicycles and for money to be raised to purchase this. The children shared suggestions on how to enhance school infrastructure to promote travel to school. These included; *"promote the idea to teachers and principal"* and *"protest"*.

Who can help?

Children identified that to enact the promoters and eliminate the barriers of active travel to school, in most cases requires a collaborative approach, viewing themselves as having limited control. "*Ourselves*" emerged in relation to just three promoter categories - road infrastructure and planning, equipment and positive physical health - and one barrier category - no equipment. In contrast, the need for parental involvement was identified for six promoter categories and five barrier categories and '*government*' for 3 promoter and 3 barrier categories. In many cases the participating children identified that a number of people or types of people would be required to act togther to eliminate barriers or impove promoters.

DISCUSSION

Increasing active travel to school has the potential to contribute to daily physical activity levels and enable children to gain the health enhancing benefits. This study provides insight into the context of, and promoters and barriers to, active travel to primary schools in the West of Ireland. This study holds potential value in addressing the continued decline in active travel to school in Ireland as it shares a new perspective on the issue, the perspective of the children. Based on the promoters and barriers, required actions were identified and the actors that need to be involved were named by the school children themselves. This is the first study, on this topic, to enable children to participate actively in the research process in this way, to develop the data from their

own thoughts and experiences in the participative part of the study and to prioritise and identify solutions to address these priorities.

Patterns of active travel to school

Less than one third of children actively travelled to school in this current study, supporting the findings of previous research in Ireland (Nelson *et al*., 2008; CSO, 2002). More children from urban schools (43.3%) compared to rural schools (20.9%) actively travelled. This may be due to the lack of physical road infrastructure and greater distance to school, which concurs with the findings of what the children indicated in their web diagrams and previous research (Schofield *et al*., 2005; Nelson *et al*., 2008; Panter *et al*., 2010). Over half the children who actively travelled did so most days of the week. This suggests that when children begin actively travelling to school they are more likely to on a regular basis. While primary school boys are more likely to be physically active than girls in Ireland (Nic Gabhainn *et al*., 2007), there was no significant gender pattern uncovered in relation to active travel to school.

Making the decision to actively travel to school

The majority of active travellers reported that they decided how to travel to school, while parents primarily made the decision for children who do not travel actively. According to Kerr *et al*., (2006) the most significant predictor of active travel to school is parental concern. This also emerged in the children's web diagrams, with lack of consent identified as a barrier and encouragement as a promoter. Within encouragement, the the importance of independence and being trusted in their daily lives was identifed as important by the children. Schools, parents and children working together to map safe routes to school could address parental concerns somewhat and may be a good place to start supporting children to actively travel (Stasiuk *et al*., 2013).

Travel partners to school

Of the children who actively travelled to school; none travelled with their parents while most travelled with friends. This is similar to the findings from previous research that children are most likely to travel to school with friends (Inchley and Cuthbert, 2007). In the children's web diagrams, company and lack of company, were identified as a promoter and a barrier respectively with. These findings highlight the potential value of children being encouraged to travel actively and having company while they do so. It is important to encourage children to make health enhancing decisions in their future and enabling them to travel to school with their friends may facilitate emotional and social benefits. Approval and involvement of parents in active travel activities is also critical to their success as recognised by the children themselves in this study.

Promoters and barriers of active travel to school

Distance from school was the most frequently reported promoter and barrier of active travel, which is in accordance with previous studies (Harten and Olds, 2004; Timperio *et al*., 2004: Esther *et al*., 2009; Nelson *et al*., 2008 and Cooper *et al*., 2005). Not all children can travel actively but if initiatives are designed to enable children, for example, to join a walking bus at certain points, they will all have the opportunity to actively travel at least some of the distance to school. Various elements of road infrastructure were identified as promoters of and barriers to active travel to school in both the questionnaire data and the web diagrams, as was the need for footpaths, wider footpaths and less traffic. This concurs with the results of previous research by Inchley and Cuthbert (2007). The frequency of occurrence of road infrastructure as a promoter and barrier, in particular for children from rural areas, and the large number of suggested actions identified on this issue suggests that addressing road infrastructure requires the biggest commitment to enable active travel to primary school in Ireland. To make changes, urban planning policies must more carefully consider and address the health promoting potential of the built environment.

With concerns for the environment and personal health emerging from the children as promoters of active travel this may be another angle for schools to build on to introduce initiatives. A ‘walk to school day’ (Stasiuk *et al*., 2013) each week would work towards showing concern for the environment, health promotion and increasing active travel.

This was the first study to include children from urban and rural, disadvantaged and non-disadvantaged schools in Ireland. It is evident that more challenges faced children from rural schools and children from disadvantaged schools in Ireland. Safety concerns among children in rural schools particularly suggest the. usefulness of a ‘walking bus’ system in eliminating a prominent barrier of active travel to school while providing the company and support suggested by children. Children in the disadvantaged schools were more likely to identify lack of resources such as a bicycle or ‘good’ shoes’ as important factors, illustrating the importance of being aware of the context within which health promoting change is being advocated.

Involvement of relevant actors

Participating children identified many actors that need to be involved in enacting the promoters and eliminating the barriers, and this resulted in two key themes. Although they did not use the term specifically, children identified that a multi-sectoral approach, or people from multiple sectors, is needed to improve rates of active travel to school in Ireland. This concurs with adopting a partnership, health promoting approach (Naidoo and Willis, 2000). Furthermore these data highlight that children do have an appreciation of the complexity required to address public health issues. The second theme that emerged was that the children perceived themselves as having little direct control, and their parents and the Government having greater control over active travel to school.

In essence the children provided the information and actions needed to address the low rates of active travel to school in Ireland and called for a collaborative approach to achieve this. Previous research has highlighted the importance of school environments supportive of active travel (O'Loghlen *et al.*, 2011). Therefore, forming a multi-sectoral committee should be the first step for all schools establishing an active travel to school plan so a representative is involved with the knowledge to address each of the various categories of barriers identified by the children.

Children's ability to participate

The children illustrated their understanding of the determinants of health (Naidoo and Willis, 2000) in the way that they presented their web diagrams linking individual lifestyle factors, social and community networks, improvements in their school and living environments, and cultural and physical environmental factors related to active travel.. Through the use of a participative methodology in this study the children were able to comprehensively identify promoters, barriers, actions and actors needed to increase rates of active travel to school in Ireland without hesitation. This identifies that children, when they are asked, have many opinions on matters that affect them and have the ability to participate with interest and provide valuable insight into their own lives. Coupling the questionnaire with a participative research methodology allowed the children to expand on the questionnaire topics and provide rich data. The data followed a logical pattern with the identification of a barrier or promoter, actions required to address it, and the identification of the actors required to address each one. This research identified that children understand the process of a multi-sectoral approach to addressing a public health issue.

CONCLUSIONS

This paper examined active travel to school in the West of Ireland and makes many additions to the knowledge available to date on the topic. It was an objective of this study to enable children to voice their opinions in relation to this issue and this has been achieved. Children highlighted many

concerns that need to be addressed to increase the rates of active travel to school. Many barriers and promoters were identified, so too were actions to address each of these and actors required to be involved in the process. The logical and comprehensive identification of these by the children was impressive and this information has the potential to contribute to health promotion practice in improving active travel to school initiatives in Ireland. Involving children in the research process was a success in this study highlighting how valuable and knowledgeable they are on matters that affect their lives. This emphasises the potential of involving children in other research projects to improve the relevance of the data. To make progress it is essential that children are involved in developing an active travel to school plan in a collaborative way. This collaboration must have representation from all the identified actors to work towards addressing the issues, thus improving planning at a societal level working towards increasing active travel to school in Ireland, and by implication in other contexts.

LIMITATIONS

While the study provides important information on promoters and barriers to active travel, it also has limitations. The research was carried out with just four schools. The questionnaire was self administered immediately prior to the participative research so this may have influenced the data included in the web diagrams; specifically the questionnaire may have prompted some of the barriers or promoters of active travel to school that were identified by the children. Although there was potential for this the results of the participative research yielded many more barriers and promoters than were referred to in the questionnaire and enabled the children to identify their own priorities. Limitations of participative research include peer and adult influences and quieter children not being heard in group settings; however these were minimised by setting ground rules at the beginning of each session, and keeping the sub-groups small in size. The study design was cross-sectional, providing only a ‘snap-shot’ of the current situation. However, these specific

findings are informative and could be useful in guiding future research and in informing health promotion programmes.

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