

## **Title: Process evaluation of a pilot study to test the feasibility of an incentive scheme to increase active travel to school**

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### **Abstract**

**Background:** Active travel to school (ATS) can increase children's levels of physical activity but so far there is limited evidence that ATS interventions are effective. The RIGHT TRACKS pilot study aimed to test the feasibility of an incentive-scheme to increase ATS in Year 5 children. Data collection included weekly child and parental reports of ATS (daily, when by text message), and accelerometers worn by children, in both control and intervention schools, over nine weeks (one week baseline + eight weeks intervention).

**Objective:** The objective of this process evaluation was to obtain additional data on the feasibility and acceptability of the intervention and trial procedures of the RIGHT TRACKS study.

**Methods:** Qualitative semi-structured interviews were conducted at the end of the pilot study in January and February 2015 (and during the pilot study, in November 2014, in the case of one dropout participant). Participants were from both intervention and control schools and included children, parents, school staff, and other stakeholders. Interviews were voice-recorded, transcribed and theme-analysed.

**Results:** A total of 29 participants were interviewed including children (n=9), parents (n=9), Year 5 teachers (n=6), head teachers (n=2), school receptionists (n=3) and

wider stakeholders (n=2). In general, data suggested that participants enjoyed taking part in the RIGHT TRACKS study and engaged with it. However, a number of issues were raised pertaining to recruitment, data collection, and use of incentives. Key recommendations included close collaboration with organisations already working in schools, considering a different range of incentives, and the possibility of running the scheme as a lunchtime activity.

Conclusions: Findings support the feasibility and acceptability of an incentive scheme to increase ATS. Additional feasibility work should be carried out prior to a definitive evaluation trial, taking into account the findings and recommendations of this study.

Key words (max. 6): active travel to school; children; school; accelerometer; incentives; qualitative process evaluation

## **1. Background**

Active travel to school (ATS) can significantly increase children's levels of moderate-to-vigorous physical activity (MVPA) (Larouche, Saunders, Faulkner, Colley, & Tremblay, 2014) which may improve health outcomes (e.g., Saunders, Green, Petticrew, Steinbach, & Roberts, 2013). Yet, the evidence for the effectiveness of ATS interventions remains weak, mainly due to the methodological limitations of existing studies (Chillón, Evenson, Vaughn, & Ward, 2011; Larouche, Mammen, Rowe, & Faulkner, 2018). UK national data suggest that 51% of primary school children (5-10 years) actively commute to school, compared to 35% of secondary school children (11-16 years) (Department for Transport, 2018). Levels of MVPA often decrease during the transition to adolescence and behaviour patterns formed at that time are more likely to remain in later life (Hodgson, Namdeo, Araujo-Soares, & Pless-Mullooli, 2012). Targeting ATS may help reverse this trend and contribute to maintaining a healthier weight (Falconer, Leary, Page, & Cooper, 2015).

ATS is constrained by a number of factors, including distance to school, parents' working patterns, or the perceived risks of traffic, but these factors can be difficult to modify (Ahern et al., 2017). In the absence of more structural solutions, low-cost and

easier-to-implement interventions, such as using incentives, may increase the appeal of ATS and counterbalance the convenience of driving to school [reference omitted for peer review]. Using this approach, the RIGHT TRACKS study was a pilot cluster randomised controlled trial carried out in 2014 to test the feasibility of an incentive scheme to increase ATS in children aged 9-10, in two primary schools located in Northeast England [reference omitted for peer review].

In both intervention and control schools, parental report forms of ATS were collected weekly, or daily if SMS (mobile text) option was chosen by parents; child report forms of ATS were also collected weekly in both schools. Children wore ActiGraph GT3X+ accelerometer belts to assess MVPA during the journey to school; the journey from school was not considered because ATS rates tend to be lower in the morning commute (e.g., Heelan et al., 2005) and for a number of feasibility reasons (e.g., many children took part in after-school clubs, twice as much reporting would have been asked from children and parents). Due to the impracticalities of taking off the belt once at school (e.g., devices going missing or getting mixed up), children were instructed to wear the accelerometer throughout the day until bed time (except during sports or activities where it could cause discomfort) and were not required to charge the battery. Following a one-week period of baseline assessment, children in the intervention school who walked or cycled to school, as reported by their parent, were entered into a weekly £5 voucher draw, for a total of 8 school weeks. For every active trip to school, one ticket was entered into the draw. This included partway active trips which, for practical purposes, were exemplified as involving at least '5 or 7 minutes' of walking after being dropped off the car. Findings of the pilot study generally supported the feasibility of the intervention and of most trial procedures, but also highlighted issues such as poor recruitment rates of schools (3.3%) and families (33.0%), difficulties with parental paper ATS reports (66.1% of ATS parental report forms returned on time on weeks of accelerometer wear) and problems with accelerometer wear (61.5% of accelerometer recordings missing during the times of the journey to school as reported by the parent). A qualitative process evaluation was carried out at the end of the pilot trial to gain further insights into the feasibility and acceptability of the study materials and procedures. We herein report the methods and findings of that process evaluation.

## **2. Methods**

### **2.1 Participants**

Participants included children in Year 5 (age 9-10), their respective parent(s), teachers, head teachers and school receptionists (from both control and intervention schools), as well as stakeholders who were members of two different active travel charitable organisations each working with one of the schools at the time (the word stakeholder will only be used to refer to these interviewees).

### **2.2 Materials**

Parental and child interview guides were adapted from one used in a previous school-based pilot study involving accelerometer monitoring (Barber et al., 2013) and are available in appendix A and B. Questions were asked about the experience with and views of aspects of the study such as data collection and the use of incentives. The interview guide for school staff explored the feasibility of the programme from their perspective. In the case of the stakeholders, questions included how the RIGHT TRACKS study fitted within other ongoing ATS projects in schools.

Gift vouchers were issued to thank interviewees for their time; £10 for parents and £5 for the child.

### **2.3 Procedure**

Semi-structured interviews were conducted in December 2014 and January 2015, after the completion of the pilot study, at school. Parents, children, school receptionists and stakeholders were interviewed individually, whereas teachers and head teachers (i.e., a group of two teachers and one head teacher in each school) were interviewed together at their request.

At baseline, parents completed an informed consent form in which they could express an interest to be interviewed at the end of the study. At the end of the study, parents who had expressed and maintained their interest in taking part were interviewed at school. Their respective child was approached at school by the researcher for their willingness to take part in the interview. Given the number of

families who took part in the pilot study (n=29), all participants were invited to be interviewed, i.e., without purposive sampling or appeal to data saturation principles.

Key school staff members and two stakeholders were approached and agreed to be interviewed. At the start of every interview, all participants provided verbal consent (assent in the case of children), including for the interview to be audio-recorded. They were briefed about the aim of the interview, confidentiality of the data collected, their voluntary participation, and right to withdraw at any time.

Prior approval for this study was granted by the ethics committee at the Faculty of Medical Sciences at Newcastle University (case 00759).

## **2.4 Data management and analysis**

Interview recordings were transcribed verbatim and anonymised. Six interviews (the longest) were transcribed by professional interview transcript services (UK Transcription Ltd, 2014). The other 19 were transcribed by the first author who read all of the transcripts, and coded the content of responses as nodes into a database in NVivo, version 10.0.128.0 (QSR International Pty Ltd., 2014). Owing to limited resources, no interrater analysis was carried out in the thematic data analysis.

Weekly discussions with the other researchers helped reduce the risk of interpretation bias during the data analysis. Descriptive statistics were reported to characterise participants using the SPSS package version 21.0 (IBM Corp, 2012).

Five main sets of nodes were created in NVivo, one for each class of participants: parents, children, head teachers and teachers, receptionists, and stakeholders. Each of these sets of nodes was divided in themes which reflected a number of aspects of the intervention and trial procedures. Although driven by the data, these themes mainly reflected the questions asked in the various interview topic guides to which participants' answers were usually confined (e.g. asking about parental ATS reports led to answers wholly related to this topic). Dimensions assessed were relevant from a feasibility perspective.

There was a considerable overlap between themes across the different classes of participants. For example, any issues associated with wearing an accelerometer were explored from the viewpoint of children themselves, parents, teachers, and

stakeholders. Themes, in turn, were divided in sub-themes, which were nodes with a more specific focus. For instance, the theme “accelerometer” included a large number of sub-themes, such as “good things about the accelerometer”, “problems with the accelerometer” or “how parents helped with accelerometer wear”. Some quotes were assigned to more than one node. For example, participants’ views about using vouchers to engage youth in research were often indistinguishable from views on using vouchers to promote active travel or PA in youth. For analytical purposes, all nodes were grouped in seven themes, and some of them in sub-themes, as depicted in figure 1.

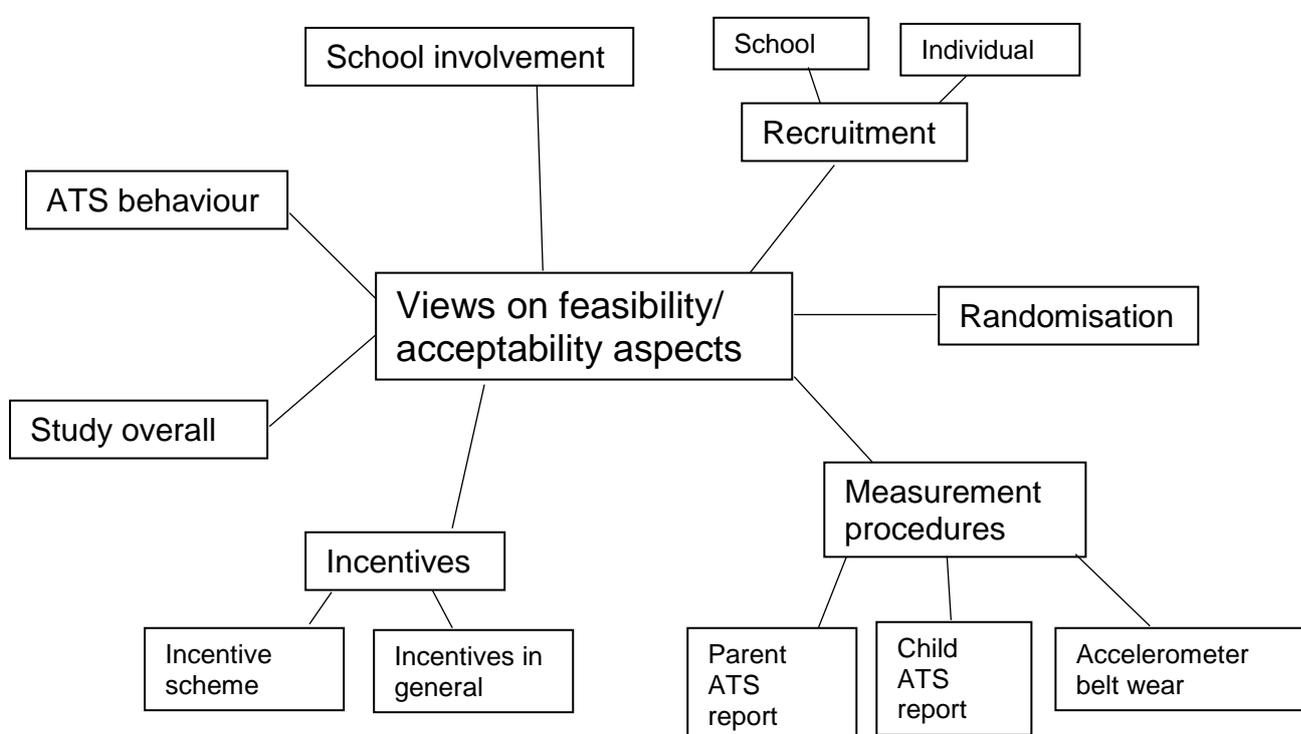


Figure 1. Themes and sub-themes of the interviews

### 3. Results

In total, 25 interviews were carried out involving 29 participants from both schools: children (n=9); parents (n=9); school receptionists (n=3); stakeholders (n=2); and the two groups of head teachers and two Year 5 teachers interviewed together, one group in the control school and one in the intervention school (n=6). The average duration of interviews varied between parents (40 minutes), children (20 minutes),

teachers and head teacher (30-36 minutes), receptionists (5-10 minutes), and the stakeholders (46-72 minutes).

A third of the parents held a degree, just over half had reported chauffeuring their child to school regularly, and only two families were from non-White British background reflecting the profile of the schools (Table 1).

Table 1 - Characteristics of interview participants, per individual, based on baseline questionnaire.

	School	Gender	Ethnic background	Highest qualification	Child's travel mode to school on a typical day	Child won draw once
Child 1	Control	Male	White British		Car	
Child 2	Control	Female	White British		Walking	
Child 3	Control	Male	White British		Car + walking	
Child 4*	Control	Male	Black African		Walking	
Child 5	Intervention	Female	White British		Car	Yes
Child 6	Intervention	Male	Chinese		Car + walking	Yes
Child 7	Intervention	Female	White British		Car + walking	No
Child 8	Intervention	Male	White British		Walking	No
Child 9	Intervention	Male	White British		Walking + cycling	No
Parent 1	Control	Female	White British	A Levels	Car	
Parent 2	Control	Female	White British	GCSE	Walking	
Parent 3	Control	Female	White British	Degree/Higher	Car + walking	
Parent 4*	Control	Male	Black African	Degree/Higher	Walking	
Parent 5	Intervention	Female	White British	A Levels	Car	Yes
Parent 6	Intervention	Female	Chinese	None	Car + walking	Yes
Parent 7	Intervention	Female	White British	Degree/Higher	Car + walking	No
Parent 8	Intervention	Female	White British	GCSE	Walking	No
Parent 9	Intervention	Female	White British	GCSE	Walking + cycling	No
Head teacher 1	Control	Female	White British			
Head teacher 2	Intervention	Female	White British			
Teacher 1	Control	Female	White British			
Teacher 2	Control	Female	White British			
Teacher 3	Intervention	Female	White British			
Teacher 4	Intervention	Male	White British			
Receptionist 1	Control	Female	White British			
Receptionist 2	Intervention	Female	White British			
Receptionist 3	Intervention	Male	White British			
Stakeholder 1		Male	White British			
Stakeholder 2		Male	White British			

\*Child 4 had dropped out of the pilot study.

Information on the qualifications of school staff and stakeholders was not collected. Parent and respective child are identified by the same number. Whether a child won a draw only applies to intervention school.

### **3.1 Views on Recruitment**

#### **3.1.1 Recruitment at the school level**

Head teachers found that the way schools were recruited (emails followed by a phone call) was acceptable. Both head teachers who were interviewed seemed unsurprised by the low uptake amongst schools (3.3%; four positive replies out of 123 approached).

*“Each school is bombarded with lots and lots of emails every day. You can’t do everything that’s offered, you’ve got to pick and choose” (Head teacher 1, control)*

This was consistent with the view of both stakeholders who stressed that schools are often under pressure to undertake numerous activities at the same time and meet performance targets. A few recommendations were made by both teaching staff and stakeholders for approaching schools.

*“[Partnering with other organisations already working in schools] could have been a really good way in (...) if they’re busy working in schools, they could just “oh, we’ve got this good project”, and then you’ve the links” (Head teacher 2, intervention)*

#### **3.1.2 Recruitment at the individual level**

Participant recruitment started with a presentation of the study which most children seemed to have enjoyed.

*“Good presentation (...) because you were really explaining it (...) some people just come in, tell you what’s about and leave” (Child 1, control)*

Children gave a number of different reasons for wanting to take part.

*“I was thinking like should I do it or should I not, because my mum was saying I should do it, because it will help me with fitness and that” (Child 3, control)*

*“I had everyone else to do it and I thought maybe I should because I don’t take part in that many clubs” (Child 5, intervention)*

One child made a suggestion for making the presentation more engaging.

*“You put the accelerometer on and you have a race, and see who was the most active for that race” (Child 8, intervention)*

Teachers held favourable views about the presentation session. Unlike children, teachers highlighted the effect that mentioning the vouchers exerted on the audience.

*“I think they were really initially enthusiastic about it, especially when you mentioned the incentive” (Teacher 1, control)*

*“They were all keen to take part at that point (...) especially with the rewards and things” (Teacher 3, intervention)*

All children expressed satisfaction with the recruitment process and information materials.

*“That was fine. My mum just signed it, there was quite a lot of papers but she just kept reading through them and signed them, handed it in the next day” (Child 2, control)*

*“[Leaflet for child] was easy to read, and there’s pictures to show you how to do it” (Child 6, intervention)*

One child appreciated the support from the teacher in completing some of the questions on the assent form.

*“Mrs S came back in she explained me that part of it. Then I got [it] and I checked down” (Child 4, control)*

For parents, the recruitment approach gave them a greater sense of involvement.

*“You can more or less say yes or no before the child gets involved (...) rather than them just being told or asked at school to do something” (Parent 5, intervention)*

Participants in the pilot study had been asked to complete a baseline questionnaire, although only the consent (and assent) forms were essential for participation (28 of the 29 families completed it). No major issues were raised but there was some indication that having the option of an online version could have helped.

*“It was long, I don’t think I had any difficulties with it though (...) it’s pretty clear” (Parent 2, control)*

*“Online would be good (...) Then I wouldn't have to carry a piece of paper out”  
(Parent 3, control)*

*““We've potentially sent a couple of versions out. If they want to fill it in online, they have got that option” (Stakeholder 2)*

On the consent procedure, one parent was unclear about the options for reporting ATS (paper form or SMS), and another parent was still not sure at that point what an accelerometer was (from the information that had been provided in the parent pack).

Teachers and head teachers mentioned the difficulties of low parent response to similar invitations, and recommended a simplification of the paper work in the future. However, there was a consensus that our recruitment rate (33%) was satisfactory.

*“There was a lot to read, wasn't it?” (Head teacher 1, control)*

*“I think a third is a good number” (Stakeholder 1)*

### **3.1.3 Randomisation**

The flip of a coin to decide allocation to intervention or control condition was generally described as fair in both schools.

*“You flipped the coin and the other school got it, so that was fair” (Child 3, control)*

However, one child and two parents wondered whether both schools could have received the scheme.

*“If every school can have this scheme it would be good” (Parent 6, intervention)*

### **3.2 Views on measurement procedures**

Data were collected on three outcome measures: parental ATS reports (in paper or optionally, and more usually, by SMS); child ATS report forms; and accelerometers.

### **3.2.1 Parent ATS report**

Children whose parents had opted for the paper report form were asked to return it completed to the classroom every week. In the interviews most children felt this was an easy task, but many reported to have failed to return the form at least once.

*“Sometimes my mum or my dad don’t have time to fill in forms” (Child 4, control)*

Another issue raised by two children in relation to the parent ATS forms was the possibility that some children may have, incorrectly, completed the parental forms.

*“My mom filled the form, but (...) some people might have cheated and put that they walked to school” (Child 9, intervention)*

In the weeks that the child wore the accelerometer, parents were asked to report travel times in addition to travel mode, which some of them found difficult.

*“The times were weird because the time that I leave home, I drive three-quarters of the way – so did you want me to start recording from the time I got out of the car at [supermarket]?” (Parent 1, control)*

Parents who had opted for SMS reports, but who completed paper forms when the child wore the accelerometer, stated that they had found the SMS texts more convenient. Others, however, were happy with paper forms.

*“A lot easier (...) It was so precise, every morning; I knew straight away when I was coming away from school and I would hear the 'ding” (Parent 1, control)*

*“I just like to have something in front of me. If I'd have it on my phone, I'd forget to do it” (Parent 5, intervention)*

### **3.2.2 Child ATS report**

In the classroom, children completed their own ATS report form on a weekly basis, i.e., the mode of travel to school was reported retrospectively, for the previous five school mornings. Most of them found this form easy to complete but one child reported difficulties completing it.

*“Like, some days you couldn’t remember, so it would just be hard” (Child 4, control)*

Amongst the interviewees was a child who regularly cycled to school. He was asked to show his bike to the researcher after being dismissed from school for the day.

*“Researcher - How did you find that?”*

*Child - Ok because you could have thought that I was lying. So you had to make sure” (Child 9, intervention)*

### **3.2.3 Accelerometer belt wear**

Wearing the accelerometer belt was mostly described as a positive experience by children. They seemed to have followed the instructions for use correctly.

*“I wasn't allowed to wear it for judo (...) it would break. It was good that way” (Child 3, control)*

*“I couldn't focus the first day I had it, but then the second day I was used to it and I just ignored it” (Child 5, intervention)*

A common strategy reported by children was to leave the belt next to the bed to remind themselves to put it on in the morning. However, most children reported having forgotten to wear the belt on some days.

*“I think [I wore it] most of the days apart from two, I forgot” (Child 1, control)*

Some children reported receiving assistance from parents, but reports suggested a high level of independence with the belt wear. All parents had a favourable opinion about the child's accelerometer assessment.

*“Some nights I had to remind her to take it off at night time” (Parent 7, intervention)*

Teachers highlighted that the belt wear did not interfere with the classroom activities.

*“There were no problems at all (...) It stopped becoming a novelty, it was just part of them” (Teacher 4, intervention)*

A frequently cited effect of wearing the accelerometer was a rise in physical activity, apparently independent of any rewards, by both parents and children. Children also reported liking the feeling of having their physical activity recorded, even though this recorded information was inaccessible to them.

*“[Child] wanted to walk, because he had the thing on” (Parent 3, control)*

*“I liked the feeling that my activity was getting recorded” (Child 1, control)*

Similarly, parents were happy with their child’s physical activity being monitored.

*“I don’t mind, it’s a good thing. It’s all about research, isn’t it” (Parent 2, control)*

As to improving the use of accelerometers in the future, a number of suggestions were made, for the users and for the researcher.

*“The father, or the mother, can do exactly the same thing with the kids” (Parent 6, intervention)*

*“Texting in the morning just to say ‘is your child wearing the equipment?’” (Parent 2, control)*

*“Where they can see how much active they are” (Parent 8, intervention)*

In the control school, parental reports and accelerometers were collected, and child reports completed, at playtime. If the child was not going to wear the accelerometer that week this would only take around 5 minutes. Children interviewed stated that they were happy with this.

### **3.4. Views on Incentives**

#### **3.4.1 Incentive scheme**

The incentive scheme was only experienced by those in the intervention school, therefore only participants in this arm of the study were asked questions about it. Overall, children expressed positive (or very positive) views and experiences associated with the scheme.

*“It was really funny, because I had a couple of other friends there” (Child 5, intervention)*

*“It was fair, there wasn’t just one person getting picked, like over and over” (Child 8, intervention)*

The only limitation of the scheme brought up was the fact that some people never won any draw, but no one seemed particularly troubled.

*“Me - So how did you feel about [not winning the draw]?”*

*Child - I just felt the excitement*

*Me - Did you also feel sad?*

*Child 8 - When I didn't get I felt I bit, ohh” (Child 8, intervention)*

Parents also saw the incentive scheme in a positive light, regardless of whether their child had won a draw or not, and none reported problems.

*“She never once came home and said “oh, I haven't won the draw” (...) It didn't distract from her enthusiasm for the accelerometer or for walking to school” (Parent 7, intervention)*

Children could not think of ways to improve the incentive scheme but a number of ideas were proposed by the parents, some of which provided further support for the acceptability of an incentive approach.

*“Maybe the rewards, instead of vouchers, could be more age group related? I don't know (...) Just toys or (...) activities” (Parent 8, intervention)*

*“Incentivising them to do more exercise. Give them a target to work towards” (Parent 7, intervention)*

Teachers' views were aligned with those held by participants. Of particular interest were the views of the teacher who assisted with the weekly draws (teacher 3).

*“All of the children (...) got a routine of what they had to do as well (...) And I think that encouraged to walk a little bit more cause they wanted more tickets in the bag (...) I thought the reward scheme worked really well” (Teacher 3, intervention)*

*“They were only out for a short space, 15min most weeks. By the time they came in and got “sorted” they were fine, they didn't miss much” (Teacher 3, intervention)*

Limitations included the difficulty of attesting the accuracy of reports.

*“I think this whole honesty thing (...) if they had walked or cycled, we just have to take their word for it” (Teacher 3, intervention)*

Both stakeholders were generally supportive of the use of lotteries.

*“I've done that lots of times (...) The more times they come, the more chances*

*they've got, and then there'd be a bike at the end of it" (Stakeholder 1)*

A poster in the corridor's wall explained the rules of the RIGHT TRACKS. Next to it was a bar chart displaying the total number of active trips to school in the classroom, week-by-week. These materials were regarded as a useful addition to the scheme.

*"I thought that was good because the children could see (...) all together how much they had walked, how many days" (Teacher 3, intervention)*

### **3.4.2 General views about the use of incentives**

Some questions in the interview guides explored more general views about the use of incentives. In addition to the weekly draws, vouchers were issued to thank children who returned materials as requested, in both arms of trial, therefore all participants answered questions about these.

*"The vouchers were quite important, how we got them like as a reward for doing the RIGHT TRACKS and doing the pedometer" (Child 2, control)*

The possibility of spending the high street vouchers as one pleased was highlighted, and the amount chosen (£5) was judged appropriate by everybody.

*"I liked the voucher idea because you can use it all the different shops" (Child 3, control)*

*"I think £5 was a reasonable amount... any more than that, it would probably be a bit too much" (Parent 7, intervention)*

Other justifications for remaining in the study, beside the incentives, were to 'finish what one had started', to help with 'physical fitness', and 'to have something to do'.

*"I'm not the type of person that starts something and drops out" (Child 1, control)*

Parents were not motivated by the vouchers, but suggested that these were influential to the child. The primary reason for parents to join the study was their child's willingness to do so and recognising the importance of ATS to health.

*"I didn't even know there were rewards really (...) He wanted to do it, I said, "Fine, not a problem"" (Parent 9, intervention)*

*"I was going to do it, and I will do it, and will continue to do it, because what you are doing is a valuable research" (Parent 4, control)*

Some parents considered that ideally people should be willing to engage in research without the need of using incentives.

*“Nowadays our kids always think of money (...) He should do some of the things because they have to be done (...) It’s a good idea for the kids... but with me, it’s not about that” (Parent 4, control)*

When asked about what prizes could be used, many parents and children reiterated that vouchers were a good choice.

*“(...) Vouchers, because he is aware they are money (...) I couldn’t think what else” (Parent 9, intervention)*

Although vouchers included a congratulations note, one child suggested the addition of certificates. Other ways to promote ATS or physical activity were suggested.

*“A short trip to the park” (Child 1, control)*

*“Put in different prizes, so like... a bike helmet, then (...) they can cycle to school” (Child 4, control)*

All parental suggestions revolved around rewarding behaviour who also gave different ideas for incentives.

*“They can have a trampoline session, or their nails done or something. So they can save points for some things” (Parent 5, intervention)*

*“I think children his age are quite happy with (...) little stickers and badges” (Parent 1, control)*

*“[Child] has got a lot of medals (...) He likes to get up in assembly and get them” (Parent 9, intervention)*

Head teachers and teachers supported the use of incentives and gave examples of similar ongoing ATS programmes in schools. One suggestion was to make use of existing resources (e.g., badges). One teacher defended a moderate use of rewards.

*“If you can tap into resources and work alongside another project, then that would work really well” (Head teacher 2, intervention)*

*“It’s like any motivation, as long as it’s not overly used so they don’t lose their value” (Teacher 4, intervention)*

For stakeholders, incentivising ATS behaviour is common but is usually done in the context of certain activities.

*“That’s something we’ve done (...) with cinema vouchers or vouchers to see the basketball. That’s worked” (Stakeholder 1)*

The weekly frequency of the draws was viewed as an advantage.

*“You had the weekly incentive, so it was a lot sooner where they were going to be reaping the benefits. Whereas with our scheme (...) they have to wait till the end of every month” (Stakeholder 2)*

One stakeholder would have preferred an incentive that other people can see, for example in assembly, in order to motivate peers. Another possible recommendation was to teach relevant skills.

*“One of the barriers is the kids will say, “Well, my bike’s got a puncture” or “The brakes don’t work.” So we fix the bikes” (Stakeholder 1)*

### **3.5 More general views about the study**

Participants were asked about their overall experience of the study, regardless of whether they were in the control or intervention group. Participants described their participation as enjoyable or beneficial, with the exception of the child who dropped out. However, his parent gave a different account.

*“I found the accelerometer uncomfortable, and quite a lot of forms” (Child 4, control, dropout)*

*“He tried to say “no, it’s kind of uncomfortable”, which I think it wasn’t. It was maybe his friends were not participating and then he felt that pressure” (Parent 4, control, dropout)*

A few children spontaneously started talking about the health and environmental benefits of ATS, even though this had never been mentioned by the researcher.

*“You were trying to keep us healthy and that because it wouldn’t be as good if you just went in the car” (Child 3, control)*

Likewise, parents thought this was a good study and many appealed to the need to encourage healthier lifestyles at an early age. There were mixed views about running the study for longer.

*“You should do it half year time. Especially when you compare on the winter time and the summer time” (Parent 6, intervention)*

*“Researcher - How would it be for you, texting us every day [during half a year]?  
Parent - Bit much” (Parent 1, control)*

Teachers and head teachers expressed satisfaction with the way the study was run.

*“We have been part of research projects before with other universities. I think it’s a benefit to both of us” (Head teacher 1, control)*

Both schools saw the duration of the study as appropriate and one suggested running it for a longer period as a lunchtime club.

*“Yeah, you could have made it like a little club, and you could have run it at lunch time. Just 15-20min, might even be 30min” (Head teacher 2, intervention)*

### **3.6 ATS behaviour**

Some children in the intervention school reported a higher frequency of active trips to school as a result of the scheme, others said that nothing changed, and others felt more motivated but already used to walk anyway.

*“I wanted to try to earn more vouchers. So I just kept on walking” (Child 6, intervention)*

The variable impact of the scheme on ATS was echoed by parents, some of whom described the routine of partial active trips in detail. It was explained to participants that partway active trips (e.g., driving and then dropping off child and walking) would also classify as active trips and therefore as valid for draw tickets.

*“Sometimes I would take her to my mum's because she would want to walk every day. So she would have been driven half of the way and then walked in” (Parent 5, intervention)*

*“He got a taxi from his dad’s once and he actually asked his dad to stop the taxi so he could walk (...) and say he had walked” (Parent 8, intervention)*

However, changes in school travel behaviour were also described by one parent in the control group, due to being assessed.

*“(...) It would be a very boring research because every morning I would have been ticking, “Did your child walk?” “Nope, nope” (...) But at least if (...) the weather was nice and we left the house a little bit earlier, I can park in [supermarket], walk up to school (...) and I would come back to the car” (Parent 1, control)*

In both cases, changes appeared to have ceased with the end of the study.

*“They fell back into the way of coming back into the car park now” (Parent 7, intervention)*

Parents highlighted factors underlying a number of barriers to ATS.

*“You have parents like myself who do work and sometimes you have just to drop and run” (Parent 3, control)*

*“Because of the weather or circumstances, they weren’t able to do that every day” (Parent 7, intervention)*

### **3.7 School involvement**

The involvement of the four teachers in the study was minimal, with the exception of teacher 3 as discussed earlier. All teachers and head teachers found the level of assistance provided to be acceptable.

*“You didn’t put any demands on us to do anything for you” (Teacher 3, intervention)*

Also relevant were the school receptionists, who collected materials at recruitment, and late forms and accelerometers throughout the study. They had significant face-to-face contact with many of the participants, but stated that they were never asked anything that they did not know, or heard any complaints. Receptionists were only asked questions about their involvement in the study, not on issues that they did not deal with (e.g., problems with report completion, or with accelerometer wear).

*“I did have to remind a couple of them to collect [the vouchers], but it had to be an*

*adult to come and collect them (...) but that was all (...) Parents were fine”*  
(Receptionist 1, control)

*“It was more routine (...) it just blended in with everything else”* (Receptionist 2,  
intervention)

However, a few suggestions for improvement were made by receptionists, including  
for carrying out interviews.

*“If that information would have been disseminated so that we knew what study you  
were doing, who was participating, and perhaps a schedule of when you planned to  
be in school”* (Receptionist 3, intervention)

*“It was at lunch time, you have to be careful to make sure that children get enough  
time for their lunch”* (Receptionist 1, control)

Finally, stakeholders underlined the role of schools in the success of projects like  
this.

*“Try to keep it as low a work rate for the teachers as possible”* (Stakeholder 2)

*“You need to have their support for it to be able to run, but once it starts running (...)  
set up groups (...) who can then look after the scheme”* (Stakeholder 2)

#### **4. Discussion**

Overall, this process evaluation suggested that an incentive scheme to increase ATS  
is feasible and acceptable, from the perspectives of children, parents, schools who  
took part in it, and two other stakeholders. The findings of this qualitative study  
largely agree with those of the pilot study when considering quantitative indicators  
such as recruitment and retention rates, percentage of materials completed or used  
and returned, attendance of the draws, or validity of ATS reports [reference omitted  
for peer review]. An incentive approach, as taken in this study, is also in line with  
other interventions reported in the ATS literature (e.g., Coombes & Jones, 2016;  
Cuffe, Harbaugh, Lindo, Musto, & Waddell, 2011; Hunter, de Silva, Reynolds, Bird, &  
Fox, 2015).

School recruitment (3.3%) emerged as one of the main difficulties. This aspect of the pilot study is better conceptualised as pertaining to the trial procedures rather than the intervention. Head teachers suggested that the most probable cause was the large amount of emails with similar invitations that schools receive. This aligns with the fact that most schools did not remember the study when contacted by phone during the recruitment phase. The most suggested alternative to approach schools was through organisations already working with the schools (e.g., Sustrans). This proposed recruitment method would be similar to that of studies conducted by academic institutions evaluating interventions led by other organisations working in the schools (e.g., Adams & Cavill, 2015). It appears to be less common to see those organisations being actively involved in the delivery of the study when the intervention has been developed (exclusively or primarily) by an academic team, as was our case, although there is no obvious reason why that should not be possible. Regarding parental recruitment, excessive paperwork seemed to have been an obstacle for families and this has been noted previously (Drews et al., 2009).

Although some parents had expressed a preference for reporting ATS in paper, this method showed greater attrition than SMS reports. Similar findings have been reported elsewhere (Shapiro et al., 2008). The use of smartphone technologies has increased dramatically since the time of our study. However, chances are that some parents will continue to prefer paper-based reporting methods. Providing those parents with a sufficient number of prepaid envelopes at the start of the study would eliminate the intermediation of children. This may increase the number of forms returned and reduce the risk of children mistakenly completing parental reports.

For those who prefer mobile technologies, an 'app' developed specifically for the study could be used (e.g., Gabrielli et al., 2017). In our study, an app could be a way to report ATS daily, but also to access general information about the study, or to send reminders to wear the accelerometer or to return materials, since these were amongst the recommendations made. There were difficulties with the reporting of the times of the journey to school, particularly in the case of multi-mode trips as one mother explained. An 'all-encompassing' app could also be used for this purpose, as parents would be prompted to report the times during or immediately after the trip, rather than completing the form later (or than having to carry the form with them), which could improve report accuracy. This approach is already being taken in

physical activity studies in which parents provide daily information via an app whilst children are fitted with an accelerometer (e.g., Lopez, Yang, Belcher, Margolin, & Dunton, 2019).

With child ATS reports, the only problem reported seemed to be the difficulty in remembering the information retrospectively at times. We did not attempt to assess child-reported ATS daily, as this would have required more effort from teachers. However, it seems that similar daily assessments are already being conducted (e.g., Sustrans, 2010) which further illustrates the importance of partnering with ATS organisations. Difficulties in remembering ATS in previous days was not raised by parents but it is possible that it affected the accuracy of their reports. Although we found that parental and child reports were generally valid vis-à-vis accelerometer data [ref omitted for peer review], we agree that future studies should still combine reports with objective measures where possible. ATS behaviour could be incentivised on the basis of the objective data collected, e.g., by scanning a swipe card on sensors along the way to school (Hunter et al., 2015), although in this particular case too, the level of 'scanning bias' remains unclear. A better solution may be to use GPS data which is possible with some accelerometers (not available in the RIGHT TRACKS study), which could indicate that children were walking, but we are not aware of studies that have used this information to reward behaviour.

As a qualitative study, our study was not addressing effectiveness, but rather feasibility and acceptability issues. In some cases, parents reported an increase in ATS and described 'park and stride' routines in detail. This attests to the potential effectiveness of the intervention, which should be assessed in an evaluation trial. It could be classified as low-cost and easier to implement compared to other approaches (e.g., travel planning, infrastructural work) and may be run together with ongoing projects in the schools. Although no one expressed negative views on the use of financial incentives, some parents and school staff suggested using other incentives such as badges or activities. We wanted an incentive appealing enough, whilst not seen as coercive, which families could use as they pleased; this factor was highlighted as an advantage by a number of children. However, the acceptability and effectiveness of an incentive is likely to vary across contexts. A possible solution is to start by testing the simplest interventions (e.g., by providing children with an accelerometer and without any incentive) and gradually moving to more complex

ones (e.g., scheme with badges as incentives, and then with prize draws), until one intervention is found which suggests that behaviour change has occurred. This within-subject design is standard practice in some areas of behavioural research (e.g., Gallagher & Keenan, 2000), and may help establish an effective intervention with small groups, whether incentive-based or not, before embarking on a large-scale between-subject study. To increase chances of success, it is important to plan for the withdrawal of the incentive scheme from the start. Recommendations for this exist, such as the gradual removal and delay of the incentives (e.g., Kazdin, 1982), which is a key feature of the highly successful incentive-based 'Food Dudes' programme aimed at increasing children's intake of fruit and vegetables (Horne et al., 2009).

This study has a number of limitations. As a PhD project, it had limited resources and only one researcher (the PhD student) was directly involved in the data collection and analysis. The sample was from an area of considerable socio-economic deprivation in North East England, with a predominantly White-British population, and therefore may not be representative of other parts of the country or internationally. There is a risk that people who accepted to participate were more likely to express favourable opinions about the study and about the use of incentives in particular. Nevertheless, there was a reasonable number of interviewees, from different ages and roles, which suggests that a balanced range of views was captured in this study, including control participants and a family whose child had dropped out.

## **5. Conclusion**

This study supported the acceptability of an incentive-scheme to promote ATS, but also highlighted a number of issues particularly associated with the delivery of the trial. We recommend that additional feasibility work be done taking those issues into account, especially on the recruitment of schools and parents, and on the improvement of ATS reporting methods. Our findings should be relevant to those working in the field, both researchers and practitioners, whether they are adopting an incentive approach to promote ATS or otherwise.

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