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Report

A randomized controlled trial of “Sikker Trafik LIVE” (“Road Safety LIVE”) – Sub-report 1

Educational intervention for primary and lower secondary schools: 8th to 10th grades (13-17 years old)

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A randomized controlled trial of “Sikker Trafik LIVE” (“Road Safety LIVE”) -– Sub-report 1 – Educational intervention for primary and lower secondary schools: 8th to 10th grades (13-17 years old)

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SUMMARY

This report presents the impact measurement for “Sikker Trafik LIVE” (“Road Safety LIVE”), an educational intervention carried out by the Danish Road Safety Council. The impact measurement concerns the part of the intervention aimed at the oldest pupils at primary and lower secondary schools: 8th to 10th grades (13-17 years old). The purpose of the LIVE intervention is to provide pupils with more insight into and a better understanding of the consequences of a serious road accident, and to focus attention on the choices pupils make in traffic. The aim is to motivate pupils to make safer choices in traffic, and to provide them with competencies that enable them to take care of themselves and to take action when confronted with the risk behavior of people around them . In the school year 2016/2017, “Sikker Trafik LIVE” visited more than 37,000 pupils in the 8th to 10th grades in Denmark.

In order to evaluate the intervention, 93 schools were recruited in summer 2016 and subsequently randomised to receive a visit by a LIVE ambassador, either in the autumn of 2016 or the spring of 2017. Data were collected by means of an electronic questionnaire in the period August-September 2016, and again in January 2017, before the control group was paid a visit by a LIVE ambassador. 3,779 responses were collected at baseline and 1,855 at follow-up from pupils in their final years of school. The intervention group and the control group were largely identical, except for minor differences in assessments of parents’ level of education. We found slightly more pupils in the control group whose parents had 15-17 or 18-20 years of education, and slightly more pupils in the intervention group who did not know what education their parents had.

The questionnaire was based on three main themes: knowledge, attitudes and behaviour. These are the areas that the Danish Road Safety Council - through the “Sikker Trafik LIVE” visits - wants to influence in order to put an end to young people’s overrepresentation in road accident statistics.

Pupils’ knowledge about road safety

The outcome measurements that we used to assess pupils’ knowledge were factual questions with correct or incorrect answers. Results on developments in pupils’ knowledge about road safety show the following:

- At follow-up, a significantly higher number of pupils receiving the LIVE intervention know which age group of road users is the most vulnerable.
- The results show that boys in the intervention group gain more knowledge about the most vulnerable age group. 88.6% of the boys in the intervention group gave the correct answer, compared with 84.7% of the girls.
- Significantly more pupils in the intervention group know which three factors cause the most road fatalities or injuries, compared with pupils who did not attend the visit. Thus, pupils in the intervention group have gained significantly more knowledge about road safety than pupils in the control group.
- At follow-up, significantly fewer pupils in the intervention group whose parents have no education beyond the 7th grade of primary and lower secondary school gave the correct answer when asked which age group of road users is most vulnerable. However, at the same time significantly more pupils in this group are aware that lack of attention when driving a car is one of the three most common causes of road fatalities or injuries.

Pupils' attitudes towards road safety

Another area that LIVE ambassadors want to influence is pupils' attitude towards different forms of risk behaviour in traffic. The aim is to motivate pupils to make safer choices, and to provide them with competencies that enable them to take care of themselves.

- Both at baseline and follow-up, a considerable number of pupils (both in the intervention group and in the control group) stated that the different forms of risk behaviour presented to them are not okay. Still, it is worth noting that approx. 20% of all pupils think it is okay, at both measurements, to drive 100 km/h where the speed limit is 80 km/h, and that more than 30% think it is okay to text while cycling. Furthermore, 15% think it is okay to ride a "tuned-up" moped.
- At follow-up, significantly more pupils in the intervention group than in the control group do not think it is okay to drive without a seat belt. In the intervention group, the percentage of pupils who do not think that this is okay increases from 93% to 94%, while in the control group, it declines from 94% to 92%.
- At follow-up, we also found that pupils in the intervention group are less tolerant of risk behaviour, such as people speeding in their cars or on their mopeds, or talking or texting on their mobile phones while cycling. However, these differences are not significant.
- At follow-up, we found that significantly fewer boys than girls in the intervention group think it is okay to a minor extent, or not at all okay, not to wear a seat belt.
- Significantly more pupils in the intervention group in the Capital Region of Denmark than in other regions of Denmark think that it is not okay to ride a "tuned-up" moped. Significantly more pupils in Region Zealand and the Region of Southern Denmark do not think it is okay not to wear a seat belt, while significantly more pupils in the Region of Southern Denmark do not think it is okay to cross a red light or listen to music while cycling.
- All questions about attitude showed significantly greater acceptance of the different forms of risk behaviour among pupils in the intervention group whose parents have no education beyond the 7th grade of primary and lower secondary school.

Pupils' behaviour in traffic

The questions about young people's behaviour in traffic focussed both on their own behaviour as road users on a daily basis, e.g. whether they wear a bicycle helmet, and whether they use their mobile phone while cycling, and on how they react in situations in which the driver of a car has had too much to drink, is driving too fast or is texting while driving. The results concerning pupils' behaviour in traffic are summarised below:

- Pupils' use of bicycle helmets and whether they use their mobile phone while cycling correlate with their parents' behaviour. Thus, if the parents wear bicycle helmets and avoid using their mobile phones when they are cycling, this increases the probability that their children will do the same. The results show that parents who have no education beyond the 7th grade use their mobile phone significantly more while cycling. This applies to both mothers and fathers.
- At follow-up, more pupils, both in the intervention group and in the control group, responded that they listen to music while cycling. However, this increase was significantly smaller in the intervention group.
- Both in the intervention group and in the control group, approx. 13% had been in a situation in which someone wanted to drive even though this person had drunk too much, but significantly fewer pupils in the intervention group objected in this situation. However, note that it can be difficult for pupils to recall a given situation when filling in the questionnaire, and consequently

the percentages may not reflect the actual number of pupils who had been in this situation, or who objected in this situation.

- Both in the intervention group and in the control group, around 70% had been in a situation in which they had to decide whether to ask others to wear a seat belt, and/or to stop texting or talking on their phone while cycling. Pupils in the intervention group were better at objecting and asking others to change their behaviour, compared with the control group. The results are positive, but not significant.
- Significantly more girls than boys in the intervention group objected if a person is driving too fast.
- Among pupils in the intervention group whose parents have no education beyond the 9th grade of primary and lower secondary school, significantly fewer objected when someone wanted to drive after drinking too much.
- Furthermore, among pupils in the intervention group whose parents have no education beyond the 9th grade significantly fewer asked others not to talk on their phone, either while driving a car or riding a bicycle, or to wear a seat belt.

Overall, we find positive impacts of "Sikker Trafik LIVE", in particular with regard to pupils' knowledge and attitudes about road safety. The young people have a strong focus on cycling accidents. Many of them stated that right-turn accidents (accidents involving lorries turning right and cyclists going straight on) were among the three most common causes of road fatalities or injuries. This may indicate that young people are very much aware of the risk of this type of road accident. Less than half of the pupils, both in the intervention group and in the control group, wear a bicycle helmet, which is more than the 41% of 13-15-year-olds who do so according to counts by the Danish Road Safety Council. However, many pupils think that it is okay to text and talk on their mobile phones while cycling.

Seen in relation to the pupils' other school activities, the visit is a relatively small intervention, and its quantitative impacts are limited. However, in light of the size of the intervention the results are good, and the positive development in pupils' knowledge and attitudes may have a long-term impact. Furthermore, the results suggest that it would be beneficial to focus more on young people's own behaviour in traffic, in particular when cycling. Overall, the evaluation thus indicates that the method of using ambassadors who tell pupils their personal stories is effective.

1 INTRODUCTION

"Sikker Trafik LIVE" ("Road Safety LIVE") is an educational intervention aimed at the oldest pupils in primary and lower secondary school: 8th to 10th grades (13-17 years old). In 2016, the "Sikker Trafik LIVE" intervention visited more than 37,000 pupils in the 8th to 10th grades.

In the intervention, the Danish Road Safety Council arranges visits to schools by people who have been involved in serious road accidents. They are called "ambassadors", and their role is to tell pupils about their own accidents. Common to these ambassadors is that they have all been seriously injured in an accident, and that they themselves were (partly) to blame for the accident/injuries.

The purpose of the visits is to provide pupils with more insight into and a better understanding of the consequences of a serious road accident, and to focus attention on the choices we all make in traffic. The personal stories of the ambassadors serve to open pupils' eyes to the fact that they may actually become involved in an accident themselves. The aim is to motivate pupils to make safer choices in traffic, and to provide them with competencies that enable them to take care of themselves and to take action when confronted with risk behavior of people around them. Intervening in other people's risk behaviour is a difficult task, not only for children aged 14-15 years, but also for adults. Interfering in other people's behaviour is very uncomfortable for many people. Therefore, the LIVE intervention focusses on teaching pupils that they can play a crucial role in preventing accidents, and it enables pupils to discuss how to perform this role.

Previous studies have documented that communicating a personal message may have an impact on road accident statistics (Institute of Transport Economics, 2012). Thus, the primary instrument is the emotional impact left by the ambassadors' personal stories. It is difficult to disagree with the stories, and their level of detail makes it easy to remember them and relate to them. The audience can appreciate the consequences of the accident, and they can experience some of the same feelings that the ambassador had. Consequently, the visits serve to broaden the experience of the audience: They are the closest the pupils can get to experiencing an accident themselves without getting hurt.

Other theoretical contributions, in particular from the field of behavioural psychology, further strengthen the theoretical foundation of the "Sikker Trafik LIVE" intervention. The emotional means used in the intervention appeal to the intuitive and subconscious parts of human decision-making processes (referred to in behavioural psychology literature as "System 1" thinking, e.g. in Kahneman (2011)). This is where a person acts and makes decisions automatically and subconsciously: Actions and decisions are fast, intuitive and triggered by emotional impulses.

The "Sikker Trafik LIVE" intervention does not use fear as an active means. The literature contains many examples of interventions based on fear appeal theory, i.e. interventions that appeal to pupils' fear in an attempt to achieve a behavioural change (Glascoff, 2000). However, appealing through fear has turned out to have opposite, and thus negative, effects in several cases. Although the ambassadors' personal stories may be frightening at times, the ambassadors are not supposed to scare the pupils into making them behave more safely in traffic. Put simply, the success criterion for the LIVE intervention has always been that, after the visit, the pupils should actively conclude: "I'm going to make sure, I don't end up in the same situation as him/her!", rather than passively concluding: "I'm glad I'm not that person!".

LIVE visits also include guidance on action for pupils. The challenge with such guidance is that the actions can be too complex and difficult for the pupils to perform. Moreover, guidance on action often presupposes rational and controlled decision-making processes, along the lines of Kahneman's "System 2" thinking (Kahneman, 2011). Such decisions are made more slowly and are based on more analytical, patient and strategic thinking. As the prefrontal cortex (the frontal lobe located at the front of the brain) of males is not fully developed until the age of 25, the LIVE visits focus on providing pupils with simple and manageable guidance, so that it is not unrealistic that pupils will perform the actions. For example, focus could be on:

- What young people can do to prevent a friend from driving under the influence of alcohol, for example (use knowledge that the vast majority disapprove of drink-driving as motivation to confront their friends and stop them from driving, to take their car keys or to intervene in other ways)
- What young people can do to avoid driving under the influence of alcohol themselves (plan their trip home in advance/stay overnight at the party/take turns driving home so that one person in a group always stays sober/call a friend/sister/brother/parent)
- Motivating young people to ask others to wear a seat belt by providing them with knowledge about what happens if just one passenger is not wearing a seat belt.

Furthermore, the intervention has drawn inspiration from developmental psychology, in particular from the Russian developmental psychologist Lev Vygotski (Vygotski, 1982), not least with regard to the importance of pupils' participation, involvement and ability to put things into words as a prerequisite for each pupil to gain new insight. Consequently, dialogue and interaction in the classroom are essential didactic tools.

1.1 Structure of LIVE visits

Visits by "Sikker Trafik LIVE" ambassadors last up to 90 minutes, and they are generally held for one-two classes at a time. This keeps down the number of pupils, and therefore increases the possibility of establishing good contact between the ambassador and the pupils, and it facilitates dialogue. The relatively long time span is key, as this enables the pupils to get to know the ambassador and leaves scope for dialogue and detailed discussion. However, the long visits need to be well structured. The ambassadors' stories are therefore all structured according to the same model:

- **Introduction**

  The ambassadors give a brief presentation of themselves and tell the pupils why they have come to tell their story. After hearing the story, it is the hope of the intervention that the pupils will be take better care than the ambassadors did and avoid becoming involved in a road accident. The ambassadors will typically ask questions about the pupils' own experiences: whether they know anyone who has been injured in a road accident, whether they ride a moped, etc. By asking these questions, the ambassadors establish a relationship with the pupils.
- **Life before the accident**

  The ambassadors talk about who they were before the accident; about dreams of the future, school and leisure time, all of which resembles the lives of the pupils. The purpose of this is to enable the pupils to identify with the ambassadors and thereby link the ambassadors' stories to their own lives and give them a feeling that this could also happen to them. Many of the ambassadors' stories involve a car accident. Even though the pupils themselves do not drive a car, nearly all of them travel by car, and focussing on the choices that led to the accident cre-

ates a link to the pupils' own ways of transporting themselves. Moreover, it will not be long before they start riding in cars driven by siblings and friends. The ambassadors also stress that everyone has a responsibility. Not only when they transport themselves, but also when they sit in the backseat, for example.

- **The accident**

  The ambassadors describe the run-up to the accident and illustrate the choices made along the way which led to the accident. This highlights the cause of the accident and the fault on the ambassadors' part. Moreover, the ambassadors describe the accident itself, usually supported by photographs of the car and the scene of the accident.

- **Life after the accident**

  At this stage, the ambassadors tell the pupils about their injuries, hospital stay and how the accident has affected their relatives and friends. The ambassadors talk openly and sincerely about the consequences the accident has had on their lives in relation to work, friends, leisure time, boyfriends/girlfriends, sex life, etc.

- **Break**

  The pupils get a break, and often the ambassadors ask the pupils to have at least one question ready after the break.

- **Questions**

  The ambassadors answer the pupils' questions. The ambassadors will answer any question. During dialogue with the pupils, the ambassadors can also ask questions about the pupils' attitudes, behaviour and experiences.

- **Evaluation form**

  Visits are briefly evaluated via a digital questionnaire completed by the pupils using their own mobile phones.

- **Rounding off**

  The ambassadors round off, repeat their main points and thank the pupils for participating.

Not all persons injured in a road accident can become an ambassador. The ambassadors must have made some risky choices themselves and not “merely” have been in the wrong place at the wrong time. If the latter was the case, the pupils' focus could easily be on the "guilty", faceless person and on his/her punishment. The men and women who are LIVE ambassadors have driven too fast, driven under the influence of alcohol, been inattentive, driven without a seatbelt or ridden illegally on a moped. Alternatively, they have been passengers in a car knowing that wrong choices were being made without them making objections. Thus, their behaviour and decisions have had a significant influence on the accident and/or the consequences of the accident.

The role as an ambassador requires that the person has come a long way in processing the accident. Ambassadors must have recognised their own fault and be able to talk about it. They must also be honest and willing to talk openly about the problems resulting from the accident. During their visits, the ambassadors talk about the worst thing that has ever happened to them. This is a difficult task, but it is important that the pupils can sense the ambassadors and put themselves in their place. The emotional aspect is an important mechanism. The stories are supported didactically by visual content in the form of a PowerPoint presentation with photographs and videos that substantiate what the ambassadors say. Many ambassadors also circulate physical objects that the pupils can see and touch. These include catheters, screws or other objects removed by surgery to visualise points from their stories.

Furthermore, the visits are supported by a teacher's guide and a pupil handout. The pupil handout is specific to each ambassador and includes questions and reflection exercises to be completed by the pupils before the visit, an introduction to dialogue with the ambassador during the visit and an introduction to a discussion in the class after the visit.

LIVE ambassadors are geographically dispersed throughout Denmark. They visit schools in their own area, and this gives them local knowledge which they can apply during their visit. Often, the pupils know the piece of road where the accident took place. This may give them a sense of closeness and relevance, when they realise that the accident took place somewhere they also go themselves.

Before new ambassadors start making their own school visits, they need to complete an introductory course. They go on visits with one or several experienced ambassadors, and they take an introductory course where they receive help to structure their story and to select the parts of their story to be included in the narrative at the schools. Courses are held for two-four persons to allow time for individual support and guidance. All ambassadors then participate in two annual weekend workshops, where they are prepared by professionals and they can share their knowledge and experience.

The intervention is quality-assured regularly. This is through a permanent evaluation structure in which all visits are evaluated by the pupils immediately after the visit, and through regular monitoring which is a central part of the intervention. Monitoring entails that two employees from the Danish Road Safety Council attend and observe visits throughout Denmark. They provide feedback to the individual ambassadors and ensure that the ambassadors deliver the right messages in accordance with the theory of change on which the intervention is based, and that, in general, ambassadors provide high-quality visits.

2 DESIGN OF THE SURVEY

This chapter is an account of the design structure of the randomized controlled trial, including the procedure for recruiting participants, randomisation and the statistical methods used in connection with analyses for the chapter on results (Chapter 3). This chapter is therefore mainly aimed at readers seeking knowledge about the method and details behind the survey.

2.1 Randomisation

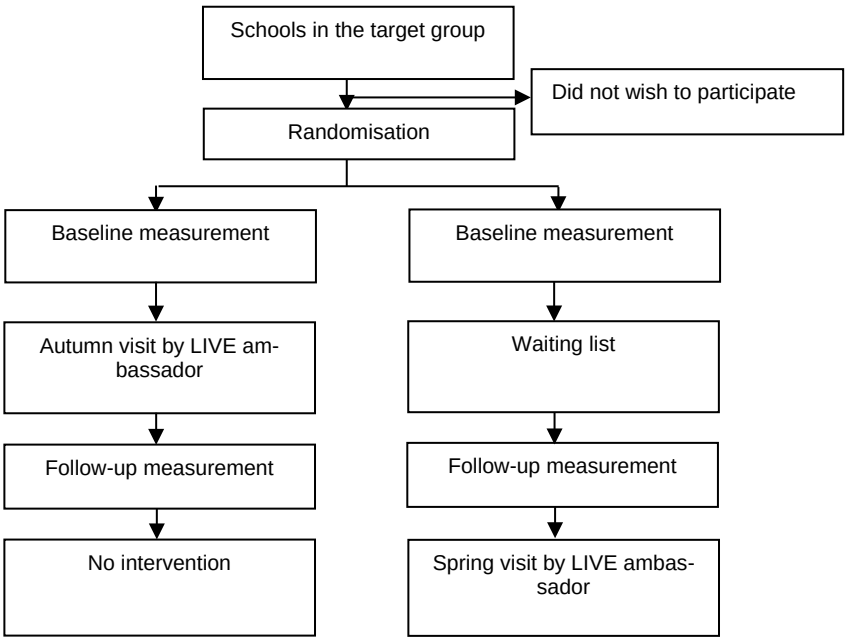
Schools were recruited from the schools which contacted the Danish Road Safety Council in summer 2016 concerning a LIVE visit in the autumn of that year. The schools were asked whether they wanted to participate in the impact measurement and thus also in the randomisation, in which they would be selected for a visit either in autumn 2016 or in spring 2017. In addition, schools that had already booked a LIVE visit in the autumn were asked whether they wanted to participate in the impact measurement. Many schools declined the invitation entirely, while others wished to complete the questionnaires, but did not wish to reschedule their visit, as the date agreed had already been included in a planned feature week, for example. The schools that were not randomised have been included in the baseline description of pupils, but not in the impact measurement.

The survey used a cluster randomised[1] waiting-list design[2] for the impact measurement, in which the schools were randomised to receive a LIVE visit either in autumn 2016 or in spring 2017. Randomisation was made at school level, as schools often book several LIVE visits at the same time, for example one visit for 8th grade and one for 9th grade. Randomisation at school level allowed us to avoid a situation in which pupils who have participated in LIVE visits (the intervention group) can influence pupils who have not participated in LIVE visits (the control group). Figure 2.1 shows the design of the impact measurement.

[1] Cluster randomisation means that we have randomised the school as a unit (cluster). This is opposed to individual randomisation, where the individual teacher or pupil is randomised.

[2] The waiting list design is a special type of randomised controlled trial, in which participants are randomly assigned to receive the intervention immediately after the randomisation or are assigned to a waiting list for the next round.

Figure 2.1 Structure of the cluster-randomised waiting list design for impact measurement of the LIVE intervention.



The survey target group consists of pupils in 8th-10th grade aged 13-17 years.

2.2 Questionnaire

All information was reported by the pupils themselves and was gathered through an online questionnaire. The contact person at the school received a link to a questionnaire about the pupils' attitudes to road safety and their behaviour in traffic. The pupils were to complete the questionnaire from 30 August to 16 September 2016 before the LIVE visits for the intervention group took place. The follow-up took place from January-February 2017 before visits for the control group began. In both measurements, the contact teachers were responsible for ensuring that the pupils completed the questionnaire, for example by uploading the link to the school intranet and letting the class or the group complete the questionnaire at the same time during class. These measurements form the basis for the impact measurement.

The pupils could write comments in the questionnaire. These comments could concern the presentation by the LIVE ambassadors or to road safety. Their comments have been included in the results section below.

2.2.1 Outcome measurements

This section describes the contents of the questionnaire, comprised by 41 questions primarily focussing on pupils' attitudes to road safety and their behaviour in traffic.

The impact measurements are primarily based on the questions used by the Danish Road Safety Council in previous evaluations. The first questions concerned pupils' knowledge about road accidents, including which age groups are most often seriously injured and the most common causes of accidents. The next questions were about pupils' attitudes to road safety such as the use of

bicycle helmets and mobile phones when cycling or driving a car. In this context, when answering questions about their attitudes, pupils had to state to what extent they agree/disagree with various statements about risk behaviour in traffic. Questions also concerned the behaviour of pupils and their parents in traffic, as we wanted to examine the extent to which parents' behaviour affected how pupils themselves behave.

Pupils were also asked about whether they had been in situations in which they had said 'no'. For example, if the people they were with wanted to drive even though they had too much to drink, or if someone who was driving them texted on their mobile phone while driving.

Questions also covered pupils' risk behaviour in connection with alcohol and drugs, as it is likely that there may be a relationship between pupils' behaviour on the roads and their use of alcohol and/or drugs. In addition to the impact measurements mentioned above, the questionnaire contained questions about background information on parents, for example their education level and their job.

Questions about drugs and alcohol were from the Youth Profile Survey (*Ungeprofilundersøgelsen*), in which several major Danish research institutions, organisations and agencies as well as a number of municipalities are behind a common survey of young people. The Youth Profile Survey aims to provide a picture of children's and young people's well-being, health and risk behaviour and thereby contribute to enhancing initiatives targeted in and across Danish municipalities. In the results (Chapter 3), we compare the responses from the evaluation from the LIVE visits with the results of the Youth Profile Survey (*Ungeprofilundersøgelsen* – Danish Committee for Health Education, 2016).

2.3 Statistical method

This section describes the statistical method applied in the trial. We decided to develop impact measurements in a cluster-randomised waiting list design, because randomisation is the most important method of accounting for any differences between schools and their pupils. In addition to the randomisation, the two statistical methods applied also help to account for any differences between schools, as well as ensuring that our results are robust. The closer the estimates from the two statistical methods are, the more certain we can be that the results we find can be attributed to the LIVE intervention. The statistical analyses have been supplemented by two econometric models.

In addition to analysing the differences between the intervention group and the control group, we examined the effect of the LIVE visit in relation to factors such as gender, geographical area (we have no responses from intervention schools in the North Denmark Region for the follow-up measurements and therefore these have been excluded from the analysis), and socio-economic background. The variable for socio-economic background was established on the basis of pupils' responses regarding the highest level of education attained by their mothers and fathers. The results of these analyses are presented in relation to the three themes in the evaluation: knowledge, attitude and behaviour.

3 RESULTS OF THE IMPACT MEASUREMENT

In this chapter, we present the results of the analysis based on the randomised controlled trials. The results have been divided into three main themes: knowledge, attitudes and behaviour, reflecting the areas that the Danish Road Safety Council wished to influence through the LIVE visit. We also present the main results of the impact measurements.

Table 3.1 shows the number of responses we received and how these are spread in the baseline measurement and the follow-up measurement. The first column shows the number of schools that we received responses from. The second column, "N", shows the total number of responses, while the third column shows the average number of responses for each school and the standard deviation (SD) of these. The fourth column, "variation", shows the number of responses that we received from the school with the fewest responses and the school with the most responses, respectively. The following columns follow the same format, but show the results of the follow-up measurement.

Table 3.1 Number of schools and number of responses from each school for baseline measurement and the follow-up. Number of observations, average and range.

	Baseline measurement				Follow-up			
	Schools	N	No. of responses on average (SD)	Variation	Schools	N	No. of responses on average (SD)	Variation
Intervention	44	1,841	41.8 (29.9)	1/128	28	881	31.5 (23.8)	1/98
Control	49	1,805	36.8 (23.4)	1/116	30	901	30 (14.7)	1/58
Not randomised	-	133	-	-	-	73	-	-
Total	93	3,779	-	-	58	1,855	-	-

Note: "Variation" shows the number of responses we received from the school with the fewest and the school with the most responses.
Source: Own calculations.

Table 3.1 shows that the number of schools and responses decreases from the baseline measurement to the follow-up. This trend is often observed in questionnaire surveys with several measurements. There is strong focus on completion of the questionnaires at the start, when the agreement about the visit is also made. After this, there is less focus on responses to the questionnaire. Furthermore, the teachers often failed to understand that they had to complete the questionnaire twice. However, the ratio between the responses and the number of schools in the intervention group and control group was more or less the same, and this is important in relation to the later analyses. Moreover, despite the dropout the database is still large enough to estimate even small impacts. The schools that were not randomised are included in the baseline description of pupils, but not in the impact measurement.

As the randomisation was done at school level, in the following section we use an Intention to Treat (ITT) analysis on repeated cross-sectional data. This means that we analyse pupils' responses irrespective of whether they were at school on the day of the visit. We decided to apply this method as we expected that the pupils would talk to each other about the visit and the pupils who were not at school on the relevant day would hear about the visit and perhaps be influenced by their classmates to change their behaviour. Furthermore, we do not know which pupils were at school on the day of the LIVE ambassador's visit.

3.1 Background of the pupils

The following section describes the characteristics of the pupils in their final years of schooling as well as their baseline responses. The data was collected in August-September 2016.

The data comes from 3,213 responses from pupils in 8th, 9th and 10th grades (14-16 years old) at 93 primary and lower secondary schools.

Table 3.2 Pupils and their parents by selected characteristics at baseline. Separately for intervention group and control group as well as differences between them. Number of observations and per cent.

	Intervention		Control	
	n	Per cent	n	Per cent
Pupils				
Boys	918	50.61	891	49.96
Living with parents	1,759	97.07	1,728	96.69
Mother				
In education	47	3.40	49	3.54
In work	1,183	85.93	1,187	84.73
Unemployed	108	7.80	122	8.72
Don't know	39	2.88	43	3.10
Mother's level of education				
1-10 years	88	4.96	91	5.19
10-12 years	452	25.07	437	24.44
13-15 years	52	2.97	70	3.91 **
15-17 years	431	23.81	428	23.94
18-20 years	127	7.02	180	10.17 ***
Don't know	660	36.56	582	32.65 ***
Father				
In education	10	0.75	16	1.20
In work	1,254	92.53	1,273	92.86
Unemployed	51	3.88	45	3.30
Don't know	40	3.04	38	2.85
Father's level of education				
1-10 years	100	5.53	109	6.10
10-12 years	489	27.05	445	24.90
13-15 years	109	6.03	99	5.54
15-17 years	183	10.12	225	12.69 **
18-20 years	161	8.90	241	13.59 ***
Don't know	766	42.47	668	37.40 ***

Note: ***: $p < 0.01$, **: $p < 0.05$, *: $p < 0.1$.
Source: Own calculations.

Table 3.2 shows the background characteristics of pupils and their parents based on responses from the pupils. The table first shows the number of pupils who gave the relevant response and

then the corresponding percentage. The first two columns show figures for the intervention group, and the next two show figures for the control group. The asterisks in the final column indicate whether the difference between the two groups is statistically significant and the level of significance.

There is a very even distribution of boys and girls in both the intervention group and the control group. It is also clear that the vast majority live with their biological parents and that both parents are in work. On average, the pupils in the intervention group were 14.29 years-old and those in the control group they were 14.30 years-old. The table also shows that many of the pupils did not know how long their parents had gone to school. We can also see that a slightly higher number of pupils' parents in the control group had 15-17 or 18-20 years of education, and that slightly more pupils in the intervention group did not know the education level of their parents. The intervention group and the control group were largely identical, except for minor differences in assessments of parents' level of education.

Pupils were also asked about the distance to their school and how they usually get to school. The same pattern appeared for the intervention group and the control group. The majority of pupils with less than 5 km distance to school walk or cycle (88%), while pupils with either 5-10 km or more than 10 km to school are usually driven there by car or take public transport. This applies for 68% and 85%, respectively.

We asked about pupils' use of alcohol and cannabis, as this could be an indicator of their risk behaviour. At baseline, most pupils in their final years at school (66.9%) had never been drunk and by far the majority had never taken cannabis (96.7%). This was very evenly distributed between the intervention group and the control group. The figures align well with the results of the Youth Profile Survey (*Ungeprofilundersøgelsen* – Danish Committee for Health Education, 2016) in which the majority of respondents drank alcohol for the first time at the age of 14-15 and were drunk for the first time at 15. In the same survey, 4% of pupils in their final years at school had smoked cannabis.

3.2 Pupils' knowledge, attitudes and behaviour before the LIVE visit

The questionnaire was based on three different types of questions that dealt with pupils' knowledge, attitudes and behaviour with regard to road safety. These are the three parameters that the Danish Road Safety Council is aiming at influencing through the LIVE visits, in order to put an end to young people's overrepresentation in road accident statistics. In the following section, we will describe the baseline measurements for the three types of questions in order to show how the pupils responded at baseline and to examine whether there are any significant differences between the intervention group and the control group at the baseline measurement.

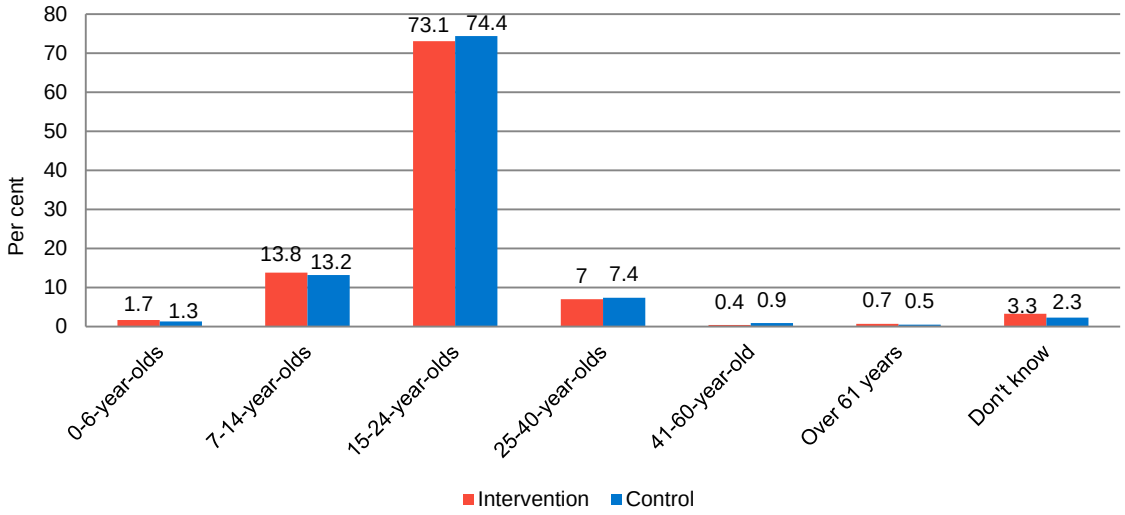
3.2.1 Knowledge

The outcome measurements that we used to assess pupils' knowledge were factual questions for which there are correct and incorrect answers. The LIVE ambassadors focussed primarily on the accident factors relevant for their own accidents, while the pupils were given knowledge about all the factors during the visits. This was how the intervention aimed at increasing knowledge.

In the questionnaire, pupils were asked about what age group they thought was at the greatest risk of being killed or seriously injured on the roads. The figure below shows the distribution of the pu-

pils' answers. The correct answer is 15-24-year-olds, and this is also reflected in Figure 3.1. There is no significant difference between responses from the intervention group and the control group.

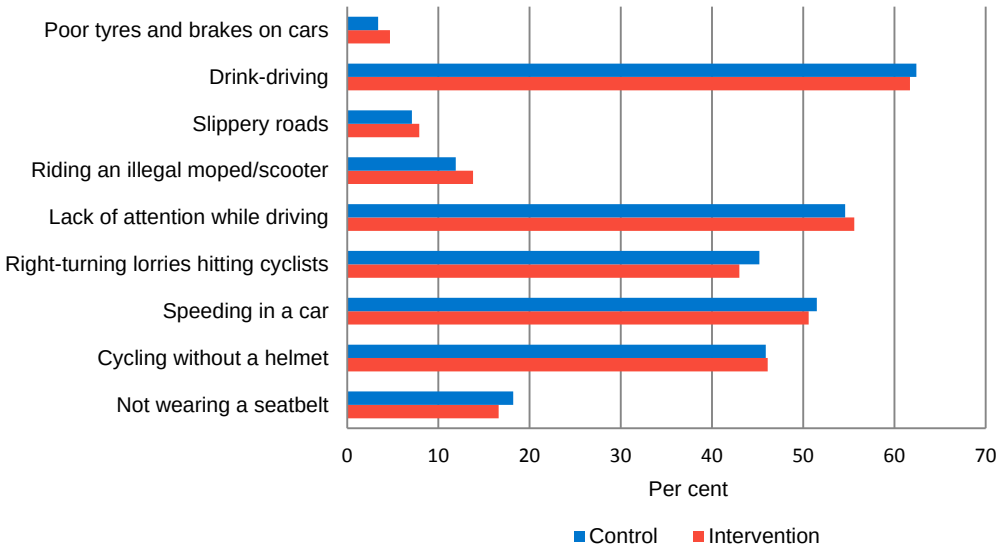
Figure 3.1 Distribution of pupils in their final years at school according to their answers at baseline to the question about what age group is at the greatest risk of serious injury or being killed on the roads. Separately for intervention group and control group. Per cent.



Note: Intervention group n = 1,812, Control group n = 1,789.
Source: Own calculations.

The next question was about what pupils thought were the reasons for most of the injuries and fatalities on the roads. Figure 3.2 shows how the pupils replied.

Figure 3.2 Percentage of pupils in their final years at school who at baseline thought that specific factors were among the three reasons for most injuries and fatalities on the roads. Separately for intervention group and control group. Per cent.



Note: Intervention group n = 4,965, Control group n = 4,935.
Source: Own calculations.

The correct answers are: 1) Speeding, 2) Lack of attention while driving, 3) Drink-driving and 4) Not wearing a seatbelt. Except for not wearing a seatbelt, these are also the reasons pupils most often chose in Figure 3.2. Many chose “right-turning lorries hitting cyclists” and “cycling without a helmet” as the most important reasons. It is likely that many gave these reasons because this age group have not got a driving licence and therefore are usually more vulnerable road users.

We found no significant differences between the intervention group and the control group at baseline with regard to the knowledge questions.

3.2.2 Attitudes

Another area that LIVE ambassadors want to influence is pupils’ attitudes towards different forms of risk behaviour on the roads. For each type of behaviour, they could state whether they think it is to a great extent or to some extent okay, or whether they think it is to a minor extent or not at all okay. Pupils generally responded that they think the scenarios described are only to a minor extent okay or they are not at all okay. Therefore, we have decided to combine these two categories to “think it isn’t okay”. Table 3.3 shows the percentage who answered that they do not think that the various types of behaviour on the roads are okay.

Table 3.3 Percentage of pupils in their final years at school who state that various forms of behaviour on the roads are not okay. Separately for intervention group and control group. Per cent.

	Intervention	Control
Do not think it is okay to....		
Travel by car without wearing a seatbelt, driver	92.7	93.6
Travel by car without wearing a seatbelt, passenger	91.8	92.1
Drive a car after drinking over the legal limit	97.5	96.6
Drive a car at 100 km/h when the speed limit is 80 km/h	78.1	79.5
Text while driving	92.7	93.0
Text while cycling	65.9	68.9 *
Ride a moped/scooter after drinking over the legal limit	95.9	96.6
Ride a moped/scooter “tuned-up” to go more than 60 km/h	84.2	85.1

Note: n = 1,702 for the intervention group, and n = 1,472 for the control group. ***: p < 0.01, **: p < 0.05, *: p < 0.1.
Source: Own calculations.

Table 3.3 shows that, in general, there is no significant difference between responses from the intervention group and the control group at baseline measurement. Pupils mostly answered that the different forms of risk behaviour are not okay. Still, it is worth noting that approx. 20% in both groups think that it is okay to drive at 100 km/h where the speed limit is 80 km/h, and that more than 30% think it is okay to text while they are cycling. Furthermore, 15% think it is okay to ride a “tuned-up” moped at more than 60 km/h. The pupils’ comments also show that some think that the speed limit for mopeds should be higher. Some write that they are “tired of being overtaken by cyclists”, even though they are riding a moped and the Danish speed limits should be the same as in other countries. There are also around 7% who think that it is okay to drive a car without wearing a seatbelt, and around 8% think that it is okay not to wear a seatbelt as a passenger.

3.2.3 Behaviour

The questions about young people's behaviour in traffic focussed on their own behaviour as road users on a daily basis, e.g. whether they wear a bicycle helmet, and whether they use their mobile phone while cycling. Furthermore, the young people were also asked how they react in situations in which other people show risk behaviour in traffic.

Table 3.4 Percentage of pupils in their final years at school showing specific behaviour in relation to risk situations in traffic. Separately for intervention group and control group. Per cent.

	Intervention	Control
Almost always wear a seat belt	97.7	98.0
Almost always wear a bicycle helmet	47.1	46.2
Only occasionally or never cross a red light	93.8	94.9
Occasionally or never ride a "tuned-up" moped	70.3	82.0 **
Occasionally or never text while cycling	88.5	91.5 ***
Occasionally or never listen to music while cycling	77.6	76.9
Occasionally or never talk on mobile phone while cycling	92.7	93.7

Note: n = 1,702 for the intervention group, and n = 1,472 for the control group. ***: $p < 0.01$, **: $p < 0.05$, *: $p < 0.1$.
Source: Own calculations.

Table 3.4 shows that significantly fewer pupils in the intervention group never or only occasionally text while cycling. Similarly, significantly fewer pupils in the intervention group never or only occasionally ride a "tuned-up" moped. All pupils almost always wear a seat belt when they are passengers in a car, but considering the fact that the respondents are pupils in their final years at school, who usually drive with their family, this percentage could be expected to be even higher. Furthermore, the table shows that less than half of the pupils, both in the intervention group and in the control group, wear a bicycle helmet. However, the percentage of pupils wearing a bicycle helmet is slightly higher than the 41% of 13-15-year-olds wearing helmets according to counts by the Danish Road Safety Council (Danish Road Safety Council, 2016).

Some of the pupils' comments concerned their behaviour when cycling. They stated that they cycle on traffic-free paths on their way to school, and that this is why they do not wear a bicycle helmet. One of the pupils wrote in a comment about cycling behaviour: "I'm sensible, but I know that I make some stupid choices when I cycle", and another pupil stated: "I wish they would make it compulsory to wear a helmet, because then we'd all do it".

With regard to their parents' behaviour, 97.4% of the pupils in the intervention group estimated that their mother occasionally or never texts when she cycles, while this percentage is 95.6% in the control group. For the fathers, the percentages are 93.2% and 92.2%, respectively. These numbers are associated with some uncertainty, because only one third of the pupils answered the questions, and because their responses reflect parents' behaviour when they are with their children. Parents could be more inclined to talk on their mobile phone when they are not cycling with their children. Furthermore, 44.9% of pupils in the intervention group stated that their mothers almost always wear a bicycle helmet, whereas this percentage is 45.8% in the control group. For the fathers, the percentages are 40.6 and 41.9%, respectively. Compared with the most recent count conducted by the Danish Road Safety Council, showing that 37% of women and 34% of men wear bicycle helmets (Danish Road Safety Council, 2016), this indicates a high experienced use of bicycle helmets for the pupils. Except for mothers' texting, there are no significant differences.

Pupils were asked to state whether they had been in situations in which they took action when others showed inappropriate or dangerous behaviour on the roads. For some of the questions reported in table 3.5, the results are based on relatively few responses, because only pupils who had been in the relevant situation provided responses. The percentage indicates how many pupils objected in the situation or asked someone to behave differently in traffic.

Table 3.5 Percentage of pupils who objected or asked someone to behave differently in risk situations in traffic. Number of observations and per cent.

	Intervention		Control		
Objected in a situation in which someone...	n	Per cent	n	Per cent	
Wanted to drive even though he/she had drunk too much	152	70.0	169	67.6	
Was driving too fast	362	35.5	369	36.6	
Wanted you to ride as a passenger on their moped/scooter	195	48.4	175	39.5	***
Asked someone to...					
Wear a seat belt	1,090	79.4	1,099	80.2	
Stop talking on their phone or texting while driving	785	59.6	803	60.7	
Stop talking on their phone or texting while cycling	246	20.3	251	21.7	

Note: n is relatively low compared with N for the survey, as only pupils who had been in the situation responded to the question about whether they objected. ***: p < 0.01, **: p < 0.05, *: p < 0.1.

Source: Own calculations.

No major differences can be observed with respect to how many pupils had been in the relevant situation. For example, 12% of the intervention group had been in a situation in which someone wanted to drive even though this person had drunk too much. This percentage was 13% in the control group. Both in the intervention group and in the control group, approx. 46% had been in a situation in which someone was speeding, while 24% of the intervention group and 22% of the control group had been asked whether they wanted to ride as a passenger on a moped or scooter.

However, no less than 75% of the intervention group and 76% of the control group had been in a situation in which they had to decide whether to ask someone to wear a seat belt. Both in the intervention group and in the control group, approx. 72% had been in a situation in which someone was talking on their phone or texting while driving. Moreover, 64% of the intervention group and 67% of the control group had been in a situation in which someone was talking on their phone or texting while cycling.

The pupils generally disapprove strongly of drink-driving, while considerably fewer object in situations involving speed and the use of mobile phones while driving or cycling. Less than half of the pupils who had been in such situations objected. Similarly, few pupils objected in situations in which someone wanted them to ride as a passenger on their moped or scooter. Still, significantly more pupils in the intervention group than in the control group objected. Note that it can be difficult for pupils to recall a given situation when filling in the questionnaire, and consequently the percentages may not reflect the actual number of pupils who had been in this the situation, or who objected in this situation.

3.3 Pupils' knowledge, attitudes and behaviour after the LIVE visit

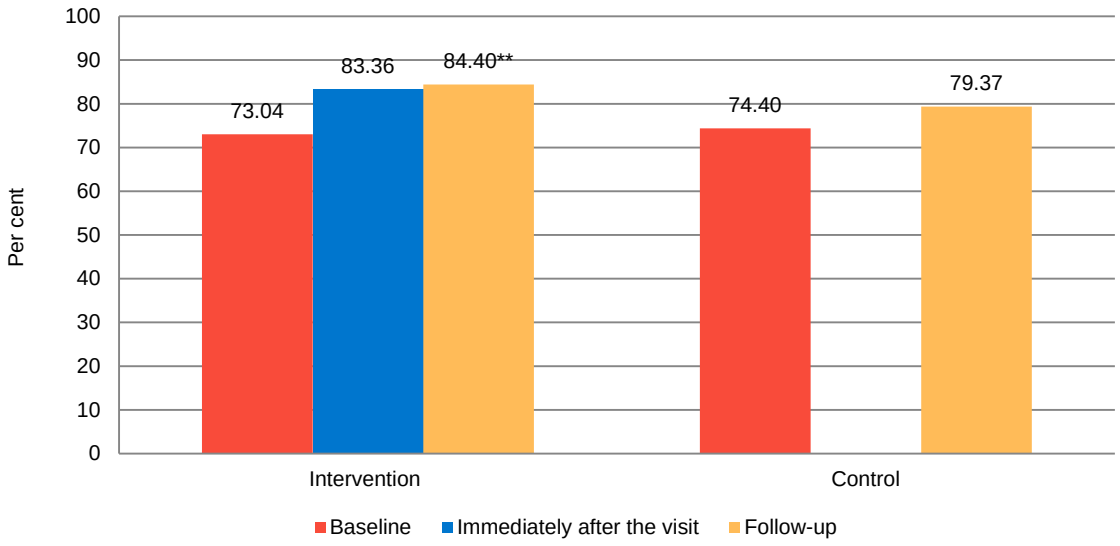
This section presents the results of the impact measurement, i.e. whether, after the LIVE visit, pupils in the intervention group changed their attitude or behaviour, or whether they had gained more knowledge, compared with the control group. Under each theme, we first present differences between the intervention group and the control group, and subsequently, we present any differences between boys and girls and geographical areas, as well as differences related to socio-economic background.

The figures in the following section show differences in responses from the intervention group and the control group at baseline measurement and follow-up. In addition, pupils in the intervention group filled in a questionnaire immediately after the visit by the LIVE ambassador. Responses from this questionnaire are shown in the blue column in the middle, called "after the visit" (only for the intervention group). Asterisks in the figures indicate whether a difference is significant in the FE model, and in some cases both in the DiD model and the FE model.

3.3.1 Knowledge

The pupils' knowledge was tested by asking them whether they knew which age group of road users is the most vulnerable. The correct answer is the 15-24-year-olds. Figure 3.3 shows that, after the LIVE visit, more pupils in the intervention group provided the correct answer to the question about which age group is the most vulnerable. This result is statistically significant.

Figure 3.3 Percentage of pupils who know which age group is most at risk of being seriously injured or killed in a road accident, at baseline, after the visit and at follow-up. Separately for intervention group and control group. Per cent.



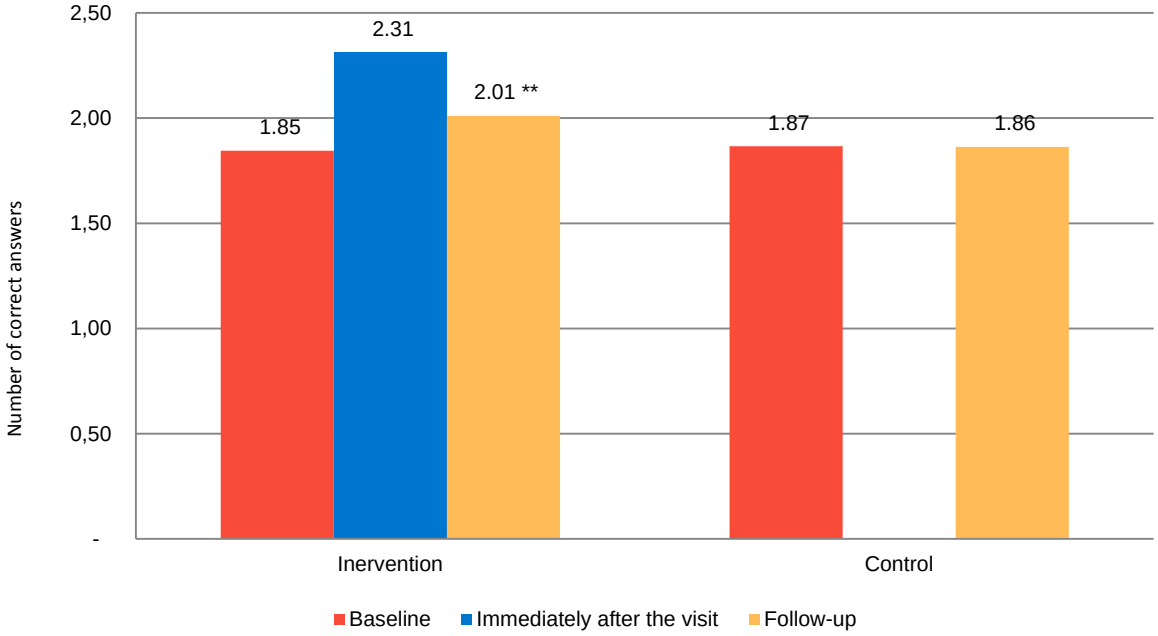
Note: Intervention group: n = 5,566, Control group: n = 5,551. ***: p < 0.01, **: p < 0.05, *: p < 0.1. The change is significant in both the DiD and the FE models.

Source: Own calculations.

Figure 3.4 shows the impact of the LIVE visit on pupils' knowledge about the factors causing the most road fatalities and injuries in Denmark. The correct answers are: 1) Driving too fast, 2) Lack of attention while driving, 3) Drink-driving and 4) Not wearing a seat belt. Since pupils were asked to choose only three factors, in the analysis we chose only to include responses from pupils

providing three causes. The figure shows how many of the three causes were correctly identified, on average. Thus, the scores range from 0-3 points, depending on the number of correctly identified causes.

Figure 3.4 Average number of correct answers to the question concerning which three factors cause the most road fatalities or injuries, at baseline, after the visit and at follow-up. Separately for intervention group and control group. Scores from 0-3 points.



Note.: Intervention group: n = 5,089, Control group: n = 5,063. ***: p < 0.01, **: p < 0.05, *: p < 0.1. The change is significant in both the DiD and the FE models. Since pupils were asked to choose only three factors, in the analysis we chose only to include responses from pupils providing three causes. The correct answers are: 1) Driving too fast, 2) Lack of attention while driving, 3) Drink-driving and 4) Not wearing a seat belt.

Source: Own calculations.

Figure 3.4 shows that significantly more pupils in the intervention group than in the control group know what are the most common causes of road fatalities or injuries. With regard to the question about which factors cause the most road fatalities or injuries, we found that significantly more pupils in the intervention group than in the control group indicated not wearing a seat belt and driving too fast as the most common causes. However, the results also show that fewer pupils in the intervention group indicated lack of attention while driving as the third of the three most common causes of road fatalities or injuries. For the intervention group, the middle column indicates pupils' responses immediately after the visit, when pupils were asked the same question as before the visit and later on at follow-up. The figure shows that, immediately after the visit, a higher number of pupils stated the correct causes of road fatalities or injuries. Some of the pupils wrote in their comments that they know someone who was involved in a road accident due to driving too fast, and that, consequently, they are very much aware of this.

3.3.1.1 Gender

The results show that boys in the intervention group gain more knowledge about the most vulnerable age group of road users. 88.6% of the boys gave the correct answer, compared with 84.7% of the girls. The results are significant at a 10 per cent level. We found no difference between boys

and girls with respect to their knowledge about which three factors cause the most road fatalities or injuries.

3.3.1.2 Geographical area

We found that pupils in the Capital Region of Denmark acquired more knowledge about which age group is most likely to be injured in a road accident than pupils in the other regions of Denmark[3]. In Region Zealand, significantly fewer pupils provided the correct answer, compared with the Capital Region of Denmark.

In relation to factors causing the most road injuries or fatalities, significantly more pupils in the Central Denmark Region (Region Midtjylland) indicated not wearing a bicycle helmet or lorries turning right as one of the main reasons. At the same time, significantly fewer pupils selected not wearing a seat belt or driving too fast as main reasons, while in the Region of Southern Denmark, significantly more pupils state that driving too fast is one of the three most important causes of road fatalities or injuries. In Region Zealand, like in the Central Denmark Region, more pupils state that cycling without a helmet is one of the three most common causes, whereas fewer pupils point to lack of attention while driving as a reason.

3.3.1.3 Socio-economic background

The results show that significantly fewer pupils whose parents have no education beyond the 9th grade of primary and lower secondary school or short-cycle higher education gave the correct answer when asked which age group of road users is most vulnerable.

However, at the same time, significantly more pupils in this group selected lack of attention while driving and drink-driving as two of the three most common causes of road fatalities or injuries. Furthermore, significantly more pupils giving the answer ‘Don’t know’ when asked about their parents’ level of education selected lack of attention while driving as one of the three most common causes of road fatalities or injuries.

3.3.2 Attitudes

Another area that LIVE ambassadors want to influence is pupils’ attitude towards different forms of risk behaviour in traffic. Table 3.6 shows the estimated change over time in pupils’ attitudes in the intervention group compared with the control group.

[3] Since we have no responses from intervention schools in the North Denmark Region at follow-up, this region has not been included in the analyses.

Table 3.6 Change from before to after the LIVE intervention in pupils' attitude towards different forms of risk behaviour on the roads, and whether or not such behaviour is okay. Estimation using the FE model.

	Intervention		Control		
	n	Per cent	n	Per cent	Change
Do you think it is okay to...					
Drive in a car without wearing a seatbelt, driver	1,682	92.7	1,674	93.6	0.03 (0.01)**
Drive in a car without wearing a seatbelt, passenger	1,666	91.8	1,647	92.1	0.02 (0.02)
Drive a car after drinking over the legal limit	1,768	97.5	1,729	96.6	-0.01 (0.01)
Drive a car 100 km/h when the speed limit is 80 km/h	1,417	78.1	1,422	79.5	0.01 (0.03)
Text while driving	1,681	92.7	1,663	93.0	0.02 (0.01)
Text while cycling	1,196	65.9	1,232	68.9	0.04 (0.03)
Ride a moped/scooter after drinking over the legal limit	1,740	95.9	1,728	96.6	0.01 (0.01)
Ride a moped/scooter "tuned-up" to go more than 60 km/h	1,527	84.2	1,522	85.1	0.02 (0.02)

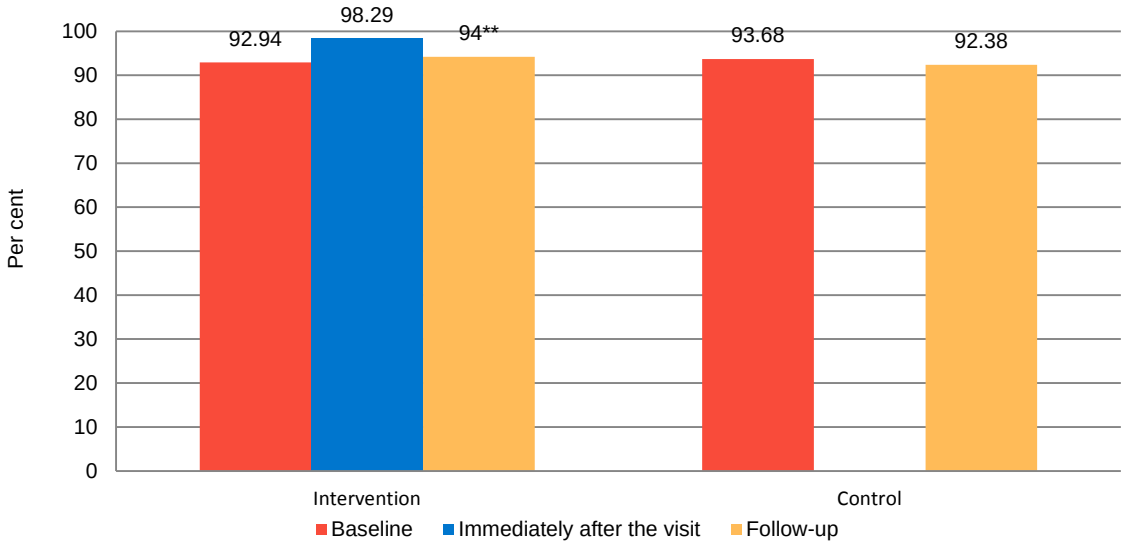
Note: A positive figure indicates that a higher percentage thinks this form of behaviour is not okay ("okay to a minor extent or not at all okay"). ***: $p < 0.01$, **: $p < 0.05$, *: $p < 0.1$. Significant in both the DiD and the FE models.

Source: Own calculations.

A positive figure in the table indicates that, at follow-up, a higher percentage of pupils in the intervention group than in the control group think that the behaviour is not okay. Numbers in parenthesis indicate standard deviations.

With the exception of the question regarding whether it is okay to drive a car after drinking over the legal limit, pupils in the intervention group are less tolerant of the various forms of risk behaviour in traffic at follow-up. Significantly more pupils in the intervention group think that it is not okay to drive without a seat belt as a driver. Figure 3.5 shows the distribution of responses in the intervention group and control group to the question of whether they think that it is not okay to drive without a seat belt as a driver, at the baseline measurement and at follow-up.

Figure 3.5 Percentage of pupils who think it is not okay to travel without a seat belt as a driver, at baseline, after the visit and at follow-up. Separately for intervention group and control group. Per cent.



Note: Intervention group: n = 1,530, Control group: n = 1,480. ***: p < 0.01, **: p < 0.05, *: p < 0.1. Significant in both the DiD and the FE models.

Source: Own calculations.

The percentage of pupils who think it is not okay to drive without a seat belt as a driver increases from 93% to 94% in the intervention group, while in the control group, it decreases from 94% to 92%. For the intervention group, the middle column indicates pupils' responses immediately after the visit. 98% of the pupils in the intervention group think it is okay to a minor extent or not at all okay to drive without a seat belt as a driver.

3.3.2.1 Gender

We found that boys to a greater extent think it is okay not to wear a seat belt. The difference is significant at a 10 per cent level. Furthermore, there is greater tendency for girls to think that it is okay to a minor extent or not at all okay to ride as a passenger on a moped.

3.3.2.2 Geographical area

We found some geographical differences in the pupils' attitudes towards risk behaviour on the roads. More pupils in the Capital Region of Denmark think that it is not okay to ride a "tuned-up" moped. The difference is significant at a 5 per cent level. More pupils in Region Zealand and the Region of Southern Denmark than in the Capital Region of Denmark do not think it is okay not to wear a seat belt. The difference is significant at a 10 per cent level. Furthermore, significantly more pupils in the Region of Southern Denmark do not think that it is okay to cross a red light or listen to music while cycling. The difference is significant at a 5 per cent level.

3.3.2.3 Socio-economic background

We see a clear difference in attitudes when pupils are broken down according to their socio-economic backgrounds. For all questions, the percentage of pupils who think that various forms of risk behaviour are not okay is significantly lower when their parents' have no education beyond the 7th grade of primary and lower secondary school. The differences are significant at a 1 per cent

level, except for the questions about texting and listening to music while cycling. Here, the difference is significant at a 5 per cent level. Similarly, a significantly larger percentage of pupils stating that they do not know their parents' level of education think it is okay to text while cycling. This result is significant at a 5 per cent level.

3.3.3 Behaviour

In this final section, we analyse whether pupils have changed their behaviour as a result of the LIVE visit. Table 3.7 shows changes in pupils' risk behaviour on the roads. A positive figure indicates that the intervention group exhibits less risk behaviour. Note that n varies for the different variables, as some of the questions depend on whether the pupil has a moped driving licence, for example.

Table 3.7 Change from before to after the LIVE intervention in pupils' risk behaviour on the roads. Estimation using the FE model.

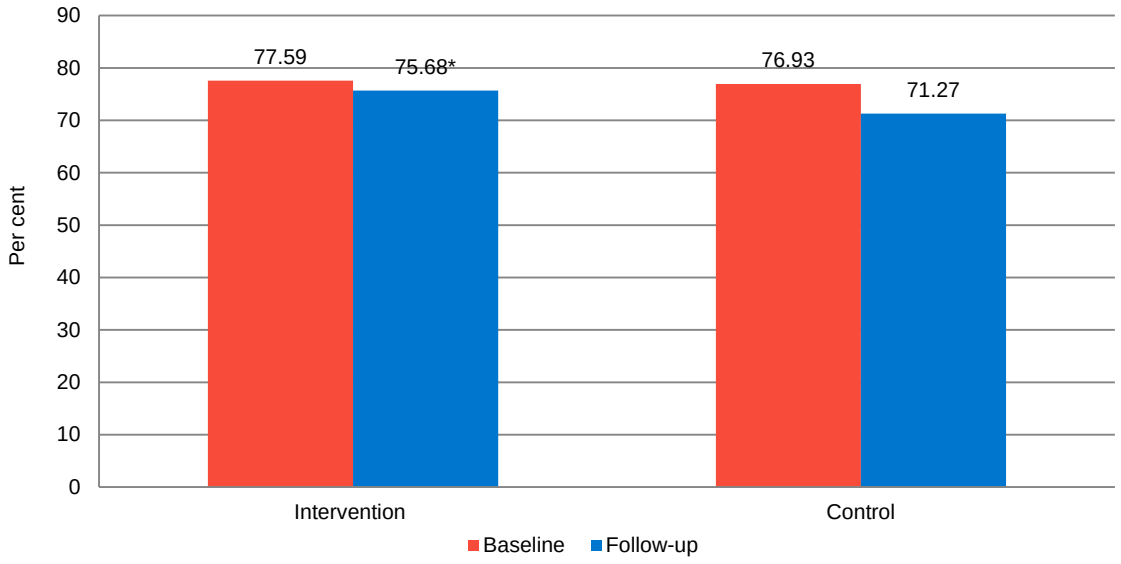
	Intervention		Control		
	n	Per cent	n	Per cent	Change
Almost always wear a seat belt	1,751	97.7	1,730	98.0	0.01 (0.01)
Almost always wear a bicycle helmet	814	47.1	774	46.2	0.02 (0.03)
Only occasionally or never cross a red light	1,701	93.8	1,696	94.9	0.01(0.02)
Only occasionally or never ride a "tuned-up" moped	102	70.3	105	82.0	-0.15(0.10)
Only occasionally or never text while cycling	1,514	88.5	1,516	91.5	-0.01 (0.02)
Only occasionally or never listen to music while cycling	1,333	77.6	1,281	76.9	-0.04 (0.02)*
Only occasionally or never talk on a mobile phone while cycling	1,592	92.7	1,556	93.7	-0.01 (0.01)

Note: Only pupils with a moped driving licence were asked the question about mopeds. Consequently, n is considerably lower for this question than for the others. ***: $p < 0.01$, **: $p < 0.05$, *: $p < 0.1$. The change is only significant in the FE model.

Source: Own calculations.

The results show that, at follow-up, more pupils listen to music while cycling, both in the intervention group and in the control group. However, significantly more pupils in the intervention group than in the control group do not listen to music while cycling. The difference in the percentage of pupils listening to music while cycling is significant at a 10 per cent level. Figure 3.6 shows responses from the intervention group and the control group at baseline and follow-up. The results indicate that more pupils in the intervention group wear bicycle helmets more often and wear seat belts more often. The differences are not significant. Pupils' use of bicycle helmets and whether they use mobile phones when they are cycling correlates with their parents' behaviour. Thus, if the parents wear bicycle helmets and avoid using their mobile phones when they are cycling this increases the probability that their children will also wear a bicycle helmet and avoid using their mobile phone while cycling. We found no geographical differences with respect to how often parents wear bicycle helmets, or whether they use their mobile phone while cycling. However, the results show that parents who have no education beyond the 7th grade of primary and lower secondary school use their mobile phones significantly more when they are cycling. This applies to both mothers and fathers. The difference is significant at a 1 per cent level.

Figure 3.6 Percentage of pupils who never or hardly ever listen to music while cycling – at baseline and follow-up. Separately for intervention group and control group. Per cent.



Source: Own calculations.

Figure 3.6 shows that, at follow-up, significantly more pupils in the intervention group never or hardly ever listen to music while cycling.

The pupils were asked whether they had been in a situation in which they objected to risk behaviour on the roads or asked someone to wear a seat belt or slow down, for example. Table 3.8 only includes responses from pupils who stated that they have been in such a situation. Therefore, the number of responses (n) differs. A positive change indicates that a higher number of pupils in the intervention group objected or intervened in a situation involving a risk.

Table 3.8 Change from before to after the LIVE intervention in the percentage of pupils who objected or asked someone to change their behaviour on the roads. Estimate using the FE model.

	Changes	n
Objected in a situation in which someone...		
Wanted to drive even though he/she had drunk too much	-0.15 (0.09)*	731
Was driving too fast	-0.04 (0.04)	3,256
Wanted you to ride as a passenger on their moped/scooter	-0.06 (0.05)	1,329
Asked someone to...		
Wear a seat belt	0.00 (0.03)	4,221
Stop talking on their phone or texting while driving	0.03 (0.04)	4,076
Stop talking on their phone or texting while cycling	0.03 (0.03)	3,591

Note: ***: p < 0.01, **: p < 0.05, *: p < 0.1. The change is significant in both the DiD and the FE models.
Source: Own calculations.

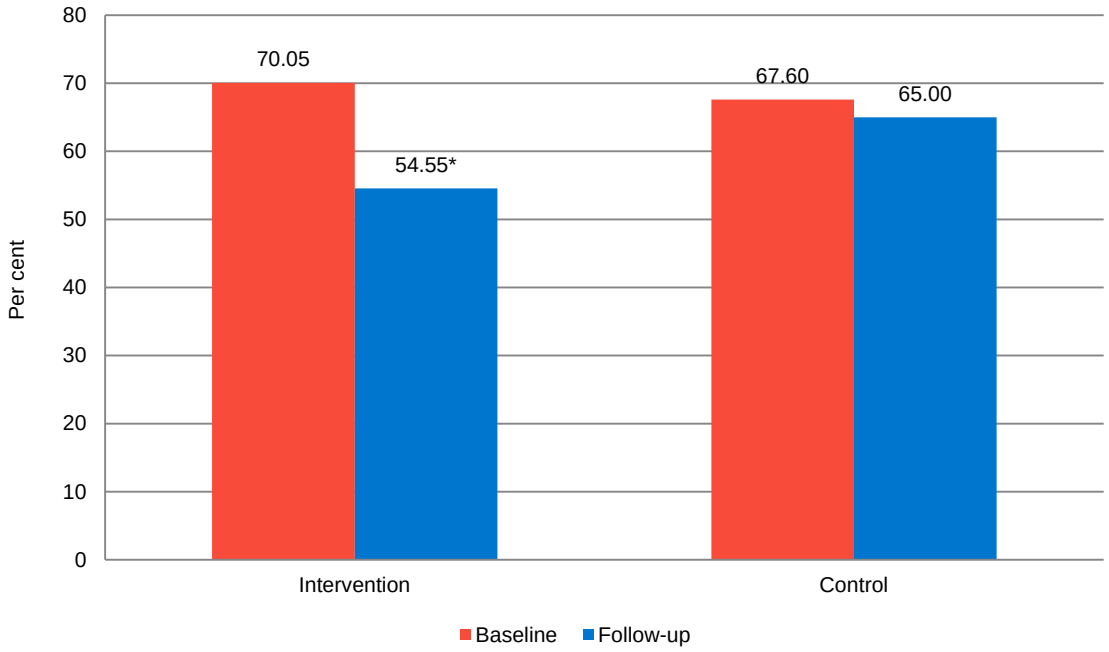
As can be seen in the table, pupils in the intervention group objected to a lesser extent than pupils in the control group in situations in which someone wanted to drive even though he/she had drunk

too much, someone was driving too fast, or someone wanted them to ride as a passenger on their moped. Both in the intervention group and in the control group, approx. 13% had been in a situation in which someone wanted to drive even though this person had drunk too much, but significantly fewer pupils in the intervention group objected in this situation. The difference is significant at a 10 per cent level. This point should be a focus point in continued efforts. The percentage of pupils who had been in a situation in which someone wanted them to ride as a passenger on their moped or scooter is approx. 24% in both groups. Table 3.8 also shows that pupils in the intervention group had become better at asking others to wear a seat belt and to stop texting or talking on their phone while cycling. Both in the intervention group and in the control group, around 70% had been in a situation in which they had to decide whether to ask others to wear a seat belt, and to stop texting or talking on their phone while cycling. The results are positive, but not significant. Note that it can be difficult for pupils to recall a particular situation when filling in the questionnaire, and consequently the number of pupils who have actually been in the situation, or who objected in the situation, may in fact be higher.

The pupils' comments vary greatly with respect to whether the pupils think that they are responsible for other people's behaviour on the roads. Some of them wrote: "We need to take care of each other", or: "It has always been important to behave responsibly in traffic. They are not only putting themselves at risk". Whereas others stated: "I don't think I'm responsible for whether other people choose not to wear a bicycle helmet or drive without a seat belt".

Figure 3.7 shows how many pupils had been in a situation in which someone wanted to drive even though he/she had drunk too much, and where the pupils objected. The figure shows a significantly larger decrease in the percentage of pupils objecting in this situation in the intervention group than in the control group.

Figure 3.7 Percentage of pupils who had been in a situation in which someone wanted to drive even though he/she had drunk too much, and where the pupils objected – at baseline and at follow-up. Separately for intervention group and control group. Per cent.



Note: Intervention group: n = 152, Control group: n = 169 at baseline. Intervention group: n = 60, Control group: n = 78 at follow-up. ***: p < 0.01, **: p < 0.05, *: p < 0.1. The change is significant in both the DiD and the FE models.

Source: Own calculations.

3.3.3.1 Gender

The results show that significantly more girls objected if someone was driving too fast. The difference is significant at a 10 per cent level. Apart from this, we found no significant differences in the percentages of girls and boys who had experienced a situation in which someone exhibited risk behaviour on the roads, and in the percentages of boys and girls who objected or asked someone to behave differently in such situations.

3.3.3.2 Geographical variation

We found no significant geographical differences in the percentages of pupils experiencing a situation in which someone exhibited risk behaviour on the roads, or in the percentages of pupils objecting or asking someone to behave differently in such situations.

3.3.3.3 Socio-economic background

We found differences in how pupils with different socio-economic backgrounds reacted in situations in which someone exhibited risk behaviour. Significantly fewer pupils objected when someone wanted to drive after drinking too much among the group of pupils whose parents had no education beyond the 9th grade of primary and lower secondary school. This difference is significant at a 10 per cent level. Furthermore, significantly fewer pupils in this group asked others not to talk on their phone, either while driving or cycling. The differences are significant at a 10 per cent level and at a 5 per cent level respectively. Moreover, significantly fewer pupils whose parents have no education beyond the 7th grade asked others to wear a seat belt. The difference is significant at a 1 per cent level.

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