Evaluation of a new learning to drive syllabus and process in Great Britain

Effects on self-reported safety-related measures in learner drivers, and impact on approved driving instructors and supervising drivers.

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Evaluation of a new learning to drive syllabus and process in GB

Effects on self-reported safety-related measures in learner drivers, and impact on approved driving instructors and supervising drivers

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Contents

Executive summary

Background

It is widely accepted in Great Britain (GB) and across the world that those drivers who have only recently become licensed to drive unaccompanied (especially if they are also young) are at a greatly increased risk of having a collision while driving, when compared with drivers who have more experience. In GB the most recent evidence (see Wells, Tong, Sexton, Grayson & Jones, 2008) suggests that the average driver who begins to drive at 17 years of age is 50% less likely to have a collision after just one year of post-licence driving when compared with their level of risk in the first six months post-licence.

A number of systematic reviews of the driver training and education literature have shown that training and education as delivered in the past for new drivers has been ineffective in lowering their collision risk. Helman, Grayson and Parkes (2010) among many others have suggested that one possible reason for this is that traditional approaches may have been focused on vehicle control skills and other factors that are required to pass practical driving tests but may not be related to collision risk.

With the intention of improving the extent to which learning to drive prepares learners for post-licence driving, the DSA have developed a new syllabus which is designed to be delivered in a 'client-centred' style similar to the 'coaching' approach used in the EU Hermes project. It is intended that the new syllabus and process will lead to learner drivers taking more ownership of their own learning, and will result in them beginning their unaccompanied driving careers with safer attitudes to key risk-relevant behaviours.

The learning to drive evaluation project

This report discusses two years of quantitative research carried out as part of an overall evaluation study of the new syllabus and process. An earlier report (McWhirter et al., 2012) reported on the qualitative research carried out as part of the same overall project.

The study utilised a design in which participants experienced either the new syllabus (treatment group), or the existing approach to learning to drive (control group). Approved Driving Instructors (ADIs) who volunteered to take part in the research were assigned randomly to one of these two groups, meaning that their learner drivers were effectively assigned to one of the groups pseudo-randomly (that is, by virtue of the ADI they happened to choose for their lessons).

Data on what the ADIs in the two groups actually delivered, and their attitudes towards what the learning to drive process should focus on, were collected through a questionnaire mid-way through the study.

Data on a number of demographic, attitudinal and behavioural variables were collected from learner drivers at a time point early in their learning process, and then again after they had passed their practical driving test. The purpose of this design was to establish if the treatment group showed a different pattern of changes on the measures used over the learning period than the pattern of changes observed in learners in the control group. The data recorded from learners related to their characteristics (age, gender, personality), the learning to drive process itself (number of lessons, amount of private practice, time taken to pass theory and practical driving test), and to a number of self-

report attitudinal and behavioural variables that are either known or strongly suspected as being linked to collision risk (for example attitudes to risky driving behaviours such as speeding, and scores on the hazard perception element of the theory test).

Findings

The ADIs in the treatment group reported delivering different content and techniques to their learner drivers than did the ADIs in the control group. They also had different attitudes towards what learner drivers should expect when learning to drive, in line with what the new syllabus and process is seeking to achieve (for example greater 'ownership' by learners, and greater reliance on 'coaching' techniques). All of this concurs with the findings from McWhirter et al. (2012), who concluded that the treatment group learner drivers experienced a qualitatively different learning to drive process than control group learners.

If the new syllabus and process is to be an effective safety intervention, we would expect to see 'safer' changes in the treatment group learners over the course of learning to drive, when compared with the control group learners. Things we would expect to see include more on-road practice while learning to drive (on-road supervised practiced is known to be protective of later crash risk), a longer time to pass their practical driving test (so that they are older when licensed), and safer attitudes and behavioural intentions relating to the collision-relevant behaviours tested.

Analysis showed that none of the effects of the outcome variables that could be attributed to the new syllabus and process were able to be established at the adopted level of statistical significance. There were some differences in some measures that could be attributed to either time effects in both groups (for example learners in both groups chose higher speeds on the video speed test at the later time point) or to apparently pre-existing differences between the groups (for example treatment group learners were higher than control group learners in thrill-seeking while driving).

When considered as a whole, the findings did suggest the presence of a pattern in the data consistent with there being an overall (although not statistically significant) treatment effect. However this pattern was not consistent with a clear safety improvement since some comparisons showed indications of safety benefits, and others indications of safety disbenefits.

In short, the various indications that are reported here of possible impacts (positive or negative) on safety related measures in the learner drivers tested are not yet clearly enough established for it to be evident what the prospects are for the new syllabus and process to make newly-qualified drivers safer.

Conclusions and recommendations

On the basis of the findings in the overall learning to driver evaluation study (this report, and McWhirter et al., 2012) the following specific recommendations are made.

1. Although the new learning to drive syllabus and process seems generally acceptable both in principle and in practice to ADIs and to learner drivers, the findings reported here do not provide a justification in terms of a likely road safety benefit for rolling out the new syllabus and process further in its current form.

2. Any further research or development work with the new syllabus and process should proceed within an *a priori* evaluation framework appropriate for the assessment of its goals.

On the basis of the wider evidence base relating to interventions to increase novice driver safety, we also make the following more strategic recommendation:

3. Alternative approaches (i.e. other than training and education) to improving young novice driver safety should be considered. This would be in keeping with the DSA's commitment to evidence-based practice, and to continue monitoring evidence from other countries on approaches that seek to increase regulation and use post-test restrictions (DSA, 2008). Some such approaches are widely supported by evidence as being effective in improving the safety of young novice drivers (see for example Parker, 2012; Russell et al., 2011; Gregersen et al., 2000).

A final recommendation relates to the wider approach that DSA should continue to take in assessing further attempts to improve road safety for novice drivers. In short, an evidence-based approach (represented by the current study) to any planned changes to driver training and testing in Great Britain should be continued.

By assessing effectiveness of incremental changes in appropriately designed trials on modest scales as in the current study, the likely effects (positive or negative) of interventions can be ascertained before wide exposure in the population, and informed decisions on the most effective use of resources available can be made. When proven interventions are rolled out on a wide scale, further evaluation can then help interventions to be delivered effectively, and to achieve good return on investment.

Abstract

It is widely accepted that those drivers who have only recently become licensed to drive unaccompanied (especially if they are also young) are at a greatly increased risk of having a collision while driving, when compared with drivers who have more experience. The Driving Standards Agency (DSA) has developed a new syllabus which is designed to deliver safety-relevant content in a client-centred style; it is intended that the new syllabus and process will lead to learner drivers taking more ownership of their own learning, and will result in them beginning their unaccompanied driving careers with safer attitudes to key risk-relevant behaviours. This report discusses the summative evaluation of the new syllabus and process. Approved driving instructors (ADIs) were assigned randomly to either deliver the new syllabus to their learners (treatment group), or to teach their learners in the usual way (control group). The resulting groups of ADIs were compared on the basis of their attitudes towards the learning to drive process. Results showed that the treatment group ADIs used more of the treatment techniques and had quantitatively different attitudes towards learning to drive than control group ADIs. Analysis of self-reported attitudes and behavioural intentions to risk-related behaviours in the treatment group and control group learner drivers revealed no evidence of a clear safety benefit related to the new syllabus and process. Although some patterns in the data suggested an overall treatment effect on learner drivers, in some cases these patterns were indicative of a safety benefit, and in some cases of a safety disbenefit. In terms of a likely road safety benefit, the results do not justify a roll-out of the new syllabus and process in its current form. Recommendations are made for the next steps that might be taken in evaluating the new syllabus and process, and for alternative approaches that might be taken in GB to improving the safety of young novice drivers.

1 Introduction

1.1 Background

In Great Britain and across the world new drivers (especially young new drivers) have a very high collision rate when compared with experienced drivers (e.g. Wells, Tong, Sexton, Grayson & Jones, 2008; Mayhew, Simpson & Pak, 2003; McCart, Shabanova & Leaf, 2003; Maycock, 2002; Williams, 1999; Sagberg, 1998; Forsyth, Maycock & Sexton, 1995; Maycock, Lockwood & Lester, 1991). In Great Britain (GB) the most recent evidence suggests that one in five new drivers has a collision of some kind within the first six months of driving post-licence, and that the average driver who begins to drive at 17 years of age is 50% less likely to have a collision after just one year of post-licence driving than they are in their first six months of driving (Wells et al., 2008).

Traditional approaches to driver training and education have failed to have an impact on the collision risk of new drivers. A number of review articles and meta-analyses over the last 25 years have arrived at this conclusion (Helman, Grayson & Parkes, 2010; Clinton & Lonero, 2006; Mayhew et al., 2002; Roberts & Kwan, 2001; Christie, 2001; Vernick et al., 1999; Mayhew et al., 1998; Brown et al., 1987).

The failure of driver training and education as a safety intervention may be in part because traditional approaches have focused on things (such as basic vehicle control skills) that are required for entry to the driving system, but are not related to post-licence collision risk. Other possible reasons include the likely difficulty in showing transfer of training from typical learner-driving contexts to post-licence driving (Helman et al., 2010; Groeger & Banks, 2007), and the multitude of other factors (for example social factors) with which driver training is competing in attempting to lead novice drivers to behave in a particular way (Williams & Ferguson, 2004; Evans, 1991)[1].

Against this context, research continues into alternative approaches to driver training that might support safety outcomes in the future. There is some tentative evidence that approaches to driver training and testing that focus on higher order cognitive skills and what might be termed 'life skills' rather than vehicle control skills, show promise as safety interventions for new drivers.

In GB for example the DSA introduced hazard perception testing into the GB driving theory test (in 2002). Based on an analysis of self-reported accident data from large cohorts of new drivers (the overall sample at the beginning of the study was 42, 851) Wells et al. (2008) suggested that this has resulted in a 17.4% reduction in the collision risk of those drivers for some types of on-road collision. The mechanism underlying this apparent effectiveness is presumably that new drivers are motivated by the hazard perception test to practice and develop their ability in this important skill; hazard perception skill is known to be associated with greater post-licence experience (McKenna & Horswill, 1999; McKenna & Crick, 1994) and with lower collision risk (McKenna &

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[1] Licensing approaches that attempt to overcome these issues have been effective in reducing novice driver collisions. The two main examples of these are licensing systems that require large amounts of supervised on-road practice (e.g. Parker, 2012; Gregersen, Berg, Engström, Nolén, Nyberg & Rimmö, 2000), or that reduce exposure to risk through post-test restrictions (for example graduated driver licensing systems – see Russell, Vandermeer & Hartling, 2011 for a recent review).

Horswill, 1999; Hull & Christie, 1993; Quimby et al., 1986), and is a skill that is trainable (Sexton, 2000; McKenna & Crick, 1993; Crick & McKenna, 1991)[2].

Another example of a non-traditional driver training and education intervention that appears to have reduced collisions in new drivers is provided by Senserrick et al. (2009) from an analysis of the DRIVE cohort study in New South Wales, Australia. The DRIVE dataset has data from 20,822 first year drivers; it consists of various self-report data regarding attitudes to risky behaviours, and also includes information regarding participation in driver education courses. The participants also consented to having questionnaire data linked to police-recorded offence and collision data. Analyses showed that those participants who had taken part in a one-day workshop with follow-up community based activities focused on building 'resilience'[3] had a 44% reduced relative risk of crashing. Although there is always a potential for self-selection bias in such studies, Senserrick et al. cite a randomised controlled trial from Griffin, Botvin and Nichols (2004) who showed that students in the US given resilience-based drug education throughout their junior high schooling had fewer driving violations and points on their licence than control participants when they reached the end of high school. This finding is particularly interesting since the intervention was not focused on driving; rather it seems to have had an effect through fostering important social and personal skills, and resilience skills in a domain separate from driving. One possible mechanism by which it may have worked is the reduction in drug- and drink-driving in the treatment group. Based on their findings and those of Griffin et al., Senserrick et al. suggest that randomised controlled trials are needed to establish the true efficacy and likely effectiveness of resilience-based driver training and education in new drivers, in terms of their crash outcomes.

1.2 Driver training and testing in Great Britain (GB): A new syllabus

The 2008 consultation on learning to drive has resulted in a desire on the part of the DSA to reform driver training in GB, and this has resulted in the design of a new syllabus and process.

The content covered by the syllabus is based on the DSA competence framework for car and light van drivers. This competence framework has been designed to identify the knowledge, skills and attitudes required to be a safe and responsible driver post-licence, rather than only skills required to pass a practical test.

The new syllabus content is designed in line with the European HERMES project (2010) to promote a culture of lifelong learning. It is 'learner centred' in that it encourages learners to take an active role in acquiring the higher order and life skills that may provide a safety benefit for new drivers. This overall approach is also heavily influenced

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[2] Data from Australia (Boufus, Ivers, Senserrick & Stevenson, 2011) and from GB (Sexton & Grayson, 2010) also suggest that people who have higher hazard perception ability (as measured by the test used in the licensing process) have lower crash risk in the early post-licence period; thus another way in which hazard perception testing may have a safety benefit is through delaying access to driving for some drivers who have not yet reached the required standard of competence.

[3] Hunter (2012) notes that there is no single agreed definition of resilience. However it is generally taken to involve "...children displaying adaptive or competent functioning despite exposure to high levels of risk or adversity." (p2)

by the GDE matrix (see Hatakka et al., 2002) which suggests that higher order and life skills, including self-awareness of those skills, are critical for safer driving.

It is the intention of the DSA that further improvements to the safety of new drivers in GB can be achieved through using the new syllabus and process. In line with a commitment to evidence-based practice (DSA, 2008) the DSA commissioned TRL in early 2010 to carry out an initial evaluation study to establish the likely effectiveness of the new approach.

1.3   This report

This report discusses the two years of quantitative research in the overall evaluation study. The aim of the quantitative research is to provide a summative evaluation of the impact of the new syllabus and process on learner drivers in terms of their self-reported attitudes and behavioural tendencies and intentions on measures associated with risk.

A separate report (McWhirter, Brough, Vernon, Fuller & Helman, 2012) discusses the qualitative research in the overall evaluation study. The aim of the qualitative research was to provide a formative evaluation of the new syllabus and process, using focus groups and interviews with the key stakeholders responsible for its effectiveness: namely Approved Driving Instructors (ADIs), learner drivers, and supervising drivers.

The remaining sections of this report cover the following areas:

Section 2 outlines the methods used in the quantitative evaluation, including details of the new syllabus and process (i.e. the intervention), the data gathered and the specific research questions addressed using the data.

Section 3 summarises the results of the quantitative evaluation.

Section 4 discusses the results in relation to the research questions, draws conclusions, and presents recommendations.

2 Method

The overall evaluation study was designed to meet four broad objectives in relation to the new learning to drive syllabus and process[4]:

1. To research how learner drivers engage with the new learning to drive syllabus (qualitative data – reported in McWhirter et al., 2012) and to assess its initial impact on learner drivers' attitudes and reported behavioural tendencies and intentions (quantitative data – reported here)

2. To identify whether ADIs can deliver the full syllabus and do so in a way that empowers learner drivers to take ownership of the learning process (qualitative data – reported in McWhirter et al., 2012)

3. To research how supervising drivers engage with the new learning to drive syllabus (qualitative data – reported in McWhirter et al., 2012)

4. To inform DSA's understanding of what changes are required to the training of ADIs and/or supporting tools included in the syllabus to ensure its successful implementation when rolled out in a subsequent, large scale evaluation stage (qualitative data – reported in McWhirter et al., 2012)

The design comprises a quasi-experimental approach in which a treatment group of learner drivers was taught to drive by ADIs who have been trained specifically in the delivery of the new learning to drive syllabus and process. A control group[5] was taught to drive in the conventional way by ADIs who have not received any further training in the content and techniques being used in the new syllabus and process. In order to address the research questions related to the objectives, comparisons have been made between the participants (learner drivers, ADIs, and supervising drivers) in the treatment and control groups.

2.1 Participants

2.1.1 ADIs

ADIs were recruited for the study through a mail shot from DSA to ADIs within the geographical area chosen for the study (around Nottingham and the East Midlands). All ADIs who expressed an interest in taking part were assigned randomly to either be in the treatment or control group. This was done in such a way as to result in

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[4] In addition, early in the project the training received by ADIs to enable them to deliver the new syllabus and process was observed. This work is discussed in McWhirter et al. (2012)

[5] It is customary in quasi-experimental designs to use the word 'comparison' rather than 'control' to describe the group or condition characterised by the absence of the treatment. The reason for this is that the word 'control' is generally held to indicate full experimental control, with randomised assignment of participants to conditions. In this study full randomisation of ADIs to condition was used (see Participants section for details), but learner drivers (and by extension supervising drivers) were assigned to a group on the basis of which ADI they happened to choose for their driving lessons. Thus strictly speaking the no-treatment condition from the perspective of learner drivers and supervising drivers is a 'comparison group'. For simplicity however, the term 'control group' is used to refer to ADIs, supervising drivers, and learner drivers who are not receiving the treatment.

approximately equal numbers of grade 4, 5 and 6 ADIs in each group; this permitted some assessment of whether learner outcomes with the new syllabus vary with ADI level[6]. (See Appendix A for a precise description of the way in which ADIs were assigned to groups after being recruited). The original list of ADIs was used for an initial recruitment of 50 ADIs into each group. The treatment group ADIs were trained during July–September 2010 in the delivery of the new syllabus, and were then briefed (as were control group ADIs) with regards to their involvement in the data collection for the trial (for example, the recruitment of learner drivers, and the opportunity to take part in focus groups). Subsequent recruitment resulted in two more 'waves' of ADIs; 10 ADIs were recruited into the treatment group for training in December 2010 and nine were recruited into the control group at the same time. A further six were recruited into each group in May 2011. These second and third waves of recruitment were designed to replace a small number of ADIs who dropped out of the study, and also to improve the rate at which learner drivers were recruited when it became clear that not all ADIs were able to supply as many learners as had been hoped at the study outset, within the intended timeframe.

2.1.2   Learner drivers

Originally the target sample of learner drivers for the project was 400, split equally between the treatment and control groups. The final achieved sample with complete datasets was 203, of which 97 were in the control group, and 106 in the treatment group. In addition 167 learner drivers provided data at TP1 only, but then dropped out of or were removed from the study. Reasons for withdrawal included learners stopping learning to drive, learners changing to an ADI not in the study, or the TRL research team being unable to contact the learner or persuade them to complete the online questionnaire at the second time point.

The learner drivers were recruited through their ADIs; when a learner driver registered with an ADI for driving lessons, ADIs offered information about the trial (see Appendix B) and asked learners for their contact details if they would like to find out more. These contact details were then sent to TRL. The project team contacted learner drivers by telephone (and by email and SMS text where telephone contact was not possible) to establish whether they fitted into the sampling frame used.

At the beginning of the study, the sole criterion used to establish whether a learner driver could take part was simply that the learner needed to have had no previous formal driver training before beginning training with their current ADI. As the study progressed, a need to match the sample as closely as possible (in terms of age and gender mix) to those people presenting for test across GB necessitated several changes to this approach. The criteria were updated weekly from 28th March 2011. Appendix C details the criteria throughout the remainder of the study.

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[6] Analysis by ADI level was originally planned on the basis of obtaining a sample of 400 complete datasets from learner drivers. Unfortunately the final sample size of learner drivers made any analysis by ADI level infeasible.

2.2   Design

With respect to the quantitative comparisons between learner drivers, a two-way mixed design was employed. The independent variables were group (between-participants, two levels: 'treatment' and 'control') and time (within-participants, two levels: 'time point 1' and 'time point 2'). The research hypothesis being tested and the corresponding null hypothesis are listed below:

H1: *Those learner drivers being taught to drive using the new syllabus will display different changes in attitudes and behavioural tendencies over the course of their learning than those learner drivers being taught using the current approach.*

H0: *The changes in attitudes and behavioural tendencies over the course of learning to drive will be the same in both groups.*

The quantitative measures used are listed in Section 2.3. Analyses were carried out using appropriate non-parametric and parametric statistical tests.

2.3   Materials

ADIs in both groups were asked to complete a questionnaire near the middle of the project. This questionnaire asked about the way in which ADIs had used the syllabus materials (if in the treatment group) and various other questions related to their interaction with their learners. This questionnaire can be seen in Appendix D.

The quantitative measures being used to assess learner drivers' attitudes and behavioural tendencies (and associated demographics and learning history) in the project were as follows:

- Age and gender

- Number of hours of driving lessons with driving instructor

- Number of hours of driving practice with friends and family

- Item on self-rated likelihood of being involved in accident compared with the average driver (Horswill, Waylen & Tofield, 2004)

- Item on self-rated driving skill compared with the average driver (Horswill, Waylen & Tofield, 2004)

- Adaptation test items – items that measure driver's ability to discriminate between road scenes with and without hazards through their self-reported speeds for those scenes (de Craen, Twisk, Hagenzieker, Elffers & Brookhuis, 2008)

- Driver Attitudes Questionnaire (DAQ) – a scale measuring attitudes towards speeding, drink driving, close-following, and overtaking (Parker, Stradling & Manstead, 1996)

- Driver Behaviour Questionnaire (DBQ) violation items – a scale measuring self-reported frequency of committing various driving violations such as speeding (Reason, Manstead, Stradling, Baxter & Campbell, 1990)

- Picture speed test – a set of four pictures measuring self-reported speed in certain traffic situations (Horswill & Coster, 2002)

- Photo-animation measures of gap acceptance, close following, and overtaking (Horswill & Coster, 2001; 2002)

- Sensation seeking scale – a set of items measuring the psychological trait of sensation seeking (Arnett, 1994)

- Thrill seeking items from the Driver Stress Inventory (DSI) – the items measure the extent to which drivers like to use driving as an outlet for their thrill-seeking tendencies (Matthews, Desmond, Joyner, Carcary, & Gilliland, 1997)

- Items on seat-belt wearing – these items were designed specifically for the study, and sought to measure various aspects of learners' self-reported seat-belt wearing behaviour and their intentions when they are licensed to drive alone

- Mobile phone items – these items were designed using the wording format from the DAQ (i.e. focusing on attitudes towards the riskiness of the activities, as well as social acceptability and attitudes to enforcement) but using 'talking on a mobile phone' and 'texting on a mobile phone' as the target behaviours

- 'Worry about accidents' items – these items were designed for the study and sought to measure the degree to which respondents worry about involvement in, and consequences of, any traffic accidents they may have in the future

- Attitudes towards risk scale – this scale measures general attitudes towards risk (Franken, Gibson, & Rowland, 1992)

- The TRL sleep hygiene scale – this scale has been developed at TRL to measure various aspects of 'sleep hygiene' (those behaviours that people can adopt to facilitate good and plentiful sleep)

- An open question about eco-driving ('list the things you can do when driving to reduce the environmental impact of your vehicle use')[7]

- Hazard perception video clips supplied by the DSA (Kinnear, Kelly, Thomson & Stradling, 2007)[8]

The above measures were included in the online questionnaire used to collect data from the majority of learner drivers in the study. Appendix E shows one paper version[9] of the online questionnaire for illustration, which contains everything on the above list with the exception of the video hazard perception clips.   There were four versions of the questionnaire in which the order and parallel forms of the adaptation test pictures and the parallel forms of the video hazard perception tests were counterbalanced. Appendix F describes how these orders differed. Learner drivers were allocated to one of the four different versions by virtue of their row in the spread sheet used to track learner driver details (i.e. pseudo-randomly).

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[7] These data are not reported here.

[8] Technical difficulties with the clips made it impossible to be sure that response time data were reliable, and therefore these data are not reported in the analysis.

[9] Sixteen learner drivers completed a paper version of the questionnaire at one or both time points, although only five remained in the final analysis (i.e. only five were learners who provided data at TP1 and TP2).

Two remaining measures used for analysis were the scores achieved by learner drivers on the hazard perception and multiple choice sections of their theory test.

2.4   Procedure

After being introduced to the study by their ADI, learner drivers were contacted by the TRL research team to establish whether or not they would like to take part. Those who agreed to take part were sent a link for the questionnaire so that they could complete it early in their learning to drive process; this is referred to throughout this report as Time Point 1 (TP1). Ideally, all learners would have completed this questionnaire before they had any driving lessons, but in practice this was not possible given that they were being recruited into the study by their ADIs (typically during their first lesson).

The TRL research team stayed in regular contact with the ADIs and learners throughout the study; when the research team became aware that a particular learner driver had passed their practical driving test, a link was sent to that learner driver so that they could complete their Time Point 2 (TP2) questionnaire.

All learner drivers were compensated with £20 to complete the questionnaire at TP1, and the same at TP2[10].

At the end of the study, theory test data for all learner drivers with complete datasets (and for whom a driving licence number was available) were obtained through DSA.

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[10] Later in the study, in order to encourage more learner drivers to complete their TP2 questionnaire, this payment was increased to £30 for prompt completion. The numbers of learner drivers given this higher payment was equivalent in control and treatment groups.

3 Results

In this section, we address two key questions. These are:

1. Can the treatment group and control group ADIs be differentiated in terms of what they appear to have delivered (and how) to their learner drivers?

2. Within the context of the answer to question 1, is the change in treatment group learners between TP1 and TP2 different to that change observed in the control group learners.

The first of these questions will give an indication of what the treatment actually was, when compared with the existing learning to drive process as experienced by the control group learners. Combined with the qualitative data from McWhirter et al. (2012) this will be used to help interpret the data from learner drivers.

The second question is essentially the main quantitative research question for the entire project; it asks whether the new syllabus and process had any effects on learner drivers' attitudes and reported behavioural tendencies and intentions, above and beyond any effects observed in the control group.

Throughout the analyses, any differences apparent between the groups overall (i.e. pre-existing differences) are also considered where relevant, as are the effects of time point overall.

3.1 A note on measures used

Some of the measures listed in Section 2.3 were created specifically for this study, while others that have been used previously have not been used with GB learner drivers. Thus for the current study, individual measures were factor-analysed where appropriate and checked for internal reliability to establish whether they were measuring the expected underlying constructs (for example for DAQ, speeding, drink driving, close following, and overtaking). These analyses are not described in detail in this report, but are available from the first author on request. The results of this process are described in Table 1. Measures not listed in this table were used as previously in the literature.

Unless noted, all attitudinal and behavioural intention measures were oriented such that a higher score represents more risky attitudes, intentions, or behaviour.

Table 1: Results of factor analysis on measures and scale used in the current study

Original measure	Final measure or measures after factor analysis
Driver Attitudes Questionnaire (DAQ) – a scale measuring attitudes towards speeding, drink driving, close-following, and overtaking (Parker, Stradling & Manstead, 1996)	The drink-driving subscale separated out from the remaining DAQ items, which were used as a single factor.
Thrill seeking items from the Driver Stress Inventory (DSI) – the items measure the extent to which drivers like to use driving as an outlet for their thrill-seeking tendencies (Matthews, Desmond, Joyner, Carcary, & Gilliland, 1997)	The item 'I think I will enjoy driving' was removed from the analysis as it did not load on the single factor which included all other items.
Items on seat-belt wearing (bespoke)	Two factors emerged – one relating to 'comfort' and the other relating to the habitual use of seat belts.
Mobile phone items (bespoke)	Four underlying factors were found. These were 'Resistance to increased enforcement', 'Public perception of safety of using a phone while driving', 'Self attitudes toward safety of using a phone while driving' and 'Perceived prevalence of using a phone while driving'.
'Worry about accidents' items (bespoke)	These six items loaded onto a single factor.
Sleep hygiene scale (bespoke)	Multiple factor structures were possible, but a decision was made on theoretical grounds to use all items together as a single factor.
Attitudes towards risk scale – this scale measures general attitudes towards risk (Franken, Gibson, & Rowland, 1992)	Two factors emerged – one relating to doing risky things, and one relating to doing things that are disapproved of.

3.2 A note on analyses

Throughout this section the statistical analyses used to test the statistical significance of any differences depend on the nature of the data. In particular, some data required that non-parametric tests of significance were used, since the data did not meet the distributional and other assumptions required for the use of parametric statistical tests. For readability the descriptions of tests used are kept to a minimum. Full details can be obtained from the first author.

Another consideration for the analyses is that a large number of comparisons were undertaken. The threshold for statistical significance was set at the standard of 5% (i.e. a p-value of 0.05, or a 5% chance that the difference observed is purely due to random

fluctuations in the data rather than due to the variable of interest), but it needs to be remembered that this applies to each comparison. For a study as a whole it needs to be considered that the expected number of comparisons showing a statistically significant difference purely due to random fluctuations in the data is equal to the number of comparisons multiplied by the significance level. For example with 20 comparisons, an average of one comparison will show a significant difference, even if there is no real effect (since 20 * 0.05 = 1)[11].

Since the power analyses for the original study were calculated on the basis of a significance threshold of 5%, a decision was taken to keep this as the starting point for each comparison. We make a judgement on the likely impact of the number of comparisons when considering the overall pattern of results.

For ease of reading, only statistically significant p-values ($p < 0.05$) and values that approach significance ($p < 0.10$) are reported throughout the results section. Non-significant findings are simply reported as such.

3.3 Can treatment group and control group ADIs be differentiated?

Treatment and control ADIs were comparable in terms of the numbers of learner drivers they worked with, and the proportion of those learners for whom the ADIs reported having contact with supervising drivers. Table 2 and Table 3 show these data. The groups did not differ significantly on any of the measures.

Table 2: Mean numbers of learner drivers (current, and since the beginning of the study) for treatment and control ADIs

Question	Treatment mean	Control mean
How many learner drivers do you currently have?	16.2	19.6
How many learner drivers have you worked with since Sept 2010?	36.3	50.8

The lack of statistical significance of the large difference in row 2 of Table 2 arises from the very wide range in the numbers of learner drivers that the ADIs had worked with in the previous year.

The fact that ADIs in the treatment group were not more likely to have contact with a supervising driver is disappointing as one mechanism by which the new syllabus and process might have been expected to have a safety impact is through the promotion of more private supervised practice. However when those ADIs who did have some contact with supervising drivers are examined separately, there do appear to be differences between the treatment and control groups. In particular, treatment group ADIs were more likely than control group ADIs to report that they encourage supervising drivers to have private practice, and to discuss road safety risks with learners (both $p < 0.001$). They were also less likely that control ADIs to report discussing lesson planning ($p = 0.03$). Table 4 shows these data

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[11] The probabilities of 0, 1, 2 and 3 out of 20 comparisons showing a significant difference where none exists are 0.36, 0.38, 0.19 and 0.06 respectively.

Table 3: Proportion of learners for whom treatment and control ADIs reported contact with a supervising driver

	Percentage of ADIs in:	
	Treatment group	Control group
About 3/4 of them	3%	9%
About 1/2 of them	14%	9%
About 1/4 of them	51%	53%
None of them	31%	29%
Number of ADIs responding	**35 (100%)**	**34 (100%)**

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Table 4: Proportion of ADIs who had contact with supervising drivers who discussed each topic with at least some of those supervising drivers

	Treatment	Control
Encouraging more private practice	83%	63%
Encouraging SD to discuss road safety risks with learners	50%	25%
Discussing lesson planning	17%	33%

Differences were also apparent between treatment and control group ADIs when considering the techniques they report using. In particular although almost all ADIs in both groups report using instruction techniques (97% and 95% for treatment and control respectively, no significant difference) the proportion ADIs reporting using 'coaching' and 'client centred learning' was significantly greater in the treatment group (p=0.02 and <0.001 respectively – see Table 5).

Table 5: Proportion of ADIs in each group reporting using 'coaching' and 'client centred learning'

Technique	Treatment	Control
Coaching	89%	76%
Client centred learning	100%	66%

Further differences are evident between treatment ADIs and control ADIs when their attitudes towards specific aspects of the learning to drive process are examined. Table 6 shows these data. Treatment group ADIs agree more than control group ADIs that learners should 'take ownership' of their learning (p<0.001). They agree less than control ADIs that learners do better when the ADIs uses their own methods (p=0.02) and that an ADI should tell a learner when the learner has made a mistake (p<0.001).

Table 6: Level of agreement with statements regarding the learning to drive process

	Treatment mean	Control mean
Learners have to take ownership of learning	4.6	3.9
Learners do better when I use my own methods	2.9	3.3
ADI should tell learner when the learner makes a mistake	2.9	3.9

In summary, the data show that ADIs in the treatment group do differ somewhat from ADIs in the control group on measures related to the approach they have taken with their learner drivers. Not all of the differences can be explained by treatment ADIs simply picking up on 'the right terminology' (for example having heard the terms 'coaching' and 'client centred' throughout their training with DSA); their lower levels of agreement with the item 'ADI should tell learner when the learner makes a mistake' for example shows a level of understanding at the conceptual level.

It is worth noting that a sizable proportion of control ADIs do claim to be using coaching and client centred methods, and that therefore the baseline against which the new syllabus and process is being compared is not equivalent to the complete absence of the processes used. However as far as the authors are aware, no control group ADIs had access to any of the workbook materials, meaning that in terms of specific content the treatment learners would have experience a very different, structured approach. In addition, McWhirter et al. (2012) were able to show meaningful qualitative differences between the learners in the two groups in terms of their experience of learning to drive. Taken together with the results from McWhirter et al. (2012) the data presented here suggest that the process and content experienced by the learners in the treatment group was certainly different to that experienced by learners in the control group.

3.4 Is the change in treatment group learners between TP1 and TP2 different to that change observed in the control group learners?

3.4.1 Demographic and personality characteristics of the two groups

Several characteristics of the groups were measured simply to check the comparability of the groups on factors that would not be expected to be influenced by the new syllabus and process. Table 7 shows the gender split, and the mean age (at TP2), by group. Statistically the groups did not differ significantly on either measure[12].

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[12] Nonetheless there are differences apparent in the gender split and mean age of the groups. Therefore a further analysis was run to check whether these age and gender differences might be responsible for any of the results. Four of the seven females aged over 20 yrs in the control group were selected at random, and excluded from the dataset. When this was done, the groups were matched as near to a common 50-50 gender split as the odd numbers in the groups allowed and were matched almost perfectly on age. All analyses reported were then run again; the pattern of findings was the same as with the complete sample with the exception of the Arnett sensation seeking scale data, which is discussed in that section. For simplicity we have reported findings from the complete sample in the main results section.

Table 7: Age and gender split of the treatment and control group learners at TP2

Group	Male/female split	Mean age
Control	46/51	19.0 yrs
Treatment	52/53	18.7 yrs

Another important factor is the personality trait of sensation seeking, which we would not expect to be amenable to change from an educational intervention. Sensation seeking in the current study was measured using Arnett's (1994) scale, and Table 8 shows the mean score on this scale by group and time point. Analysis showed a significant effect of time point ($p=0.05$), but that the effect of group and the interaction term were non-significant. The small but significant increase in sensation seeking (apparently in both groups) is unexpected. Typically sensation seeking is seen to peak at around age 15, and decline steadily thereafter before stabilising at around age 30 (see for example Steinberg, Albert, Cauffman, Banich, Graham & Woolard, 2008; Roth, Schumacherb & Brählerc 2005). In any case, the effect is very small and importantly does not appear to differ between the groups. In addition, when the groups were matched perfectly on gender and age split (see Footnote 12) the effect of time point was no longer statistically significant.

Table 8: Mean sensation-seeking score by group and time point

Group	TP1	TP2
Control	2.36	2.39
Treatment	2.40	2.46

In summary, the control and treatment groups are comparable in terms of age and gender, and in terms of the personality trait of sensation seeking.

3.4.2   Effects on the learning to drive process

A number of aims of the new syllabus and process related to the manner in which people learn to drive. Effects on the number of driver instructor hours, hours of private practice, and time taken to pass the theory and practical tests were examined. Table 9 shows data for the latter of these two pairs of variables for participants where dates were known. Groups did not differ significantly on either measure.

Table 9: Mean time taken to pass practical test and theory test from commencement of learning to drive

Group	Time to pass theory test[13]	Time to pass practical test
Control	106.4 days	242.8 days
Treatment	114.7 days	244.2 days

Table 10 shows the mean number of hours of driving instruction that the two groups had achieved at TP1 and TP2. Analysis showed that there was no difference between the groups overall, and that there was a very large effect (as would be expected) of time point ($p<0.001$). The interaction between time point and group is very close to statistical significance ($p=0.053$); because of this, the difference between the groups was tested separately at time point 1 and time point 2. This analysis showed that the groups differed on driving instructor hours at time point 1, but not at time point 2. The difference at time point 1 was not expected. One possible reason for the difference is that the ADIs in the treatment group may have been better able to motivate their learners to engage with the study, leading to these learners being more enthusiastic than those in the control group about completing the TP1 questionnaire promptly. In other words, the difference at TP1 may have been determined internally by the experimental process. The number of hours at TP2 is presumably determined externally by the learners' progress and the outcome of their test(s). It needs to be noted that the combination of the difference at TP1 and the equality at TP2 on this measure means that ADIs in the treatment group had on average 1.9 hours (or 6%) more contact time to influence their learners between TP1 and TP2 than did the ADIs in the control group. Consideration was given as to whether this could be accounted for in the analysis. For example for those variables that might be expected to vary linearly with ADI contact time, the data could be adjusted to account for the fact that treatment group learners would be expected (under the null hypothesis) to achieve 6% more change than the control group over time. On reflection however, it was not felt that any firm assumptions could be made as to which measures might be expected to vary linearly with ADI contact time; this means that any changes seen in the treatment group learners relative to the control group learners may (for some measures) be slightly overestimated compared with what might be expected had the groups been perfectly matched on the amount of ADI contact received between the two time points.

Table 10: Mean driving instructor hours by group and time point

Group	TP1	TP2
Control	7.4	36.9
Treatment	5.6	37.0

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[13] Note that a small number of participants in the study had taken their theory test before they began learning to drive. These participants were excluded from the average times to pass the theory test presented in Table 9 since there was no plausible mechanism by which the treatment could have influenced their decision when to take their theory tests. If these people are included in the analysis there is still no statistically significant difference between the groups.

Table 11 shows the mean number of hours of private practice that the two groups had achieved at TP1 and TP2. Analysis showed that there was no significant difference between the groups overall, and that there was a very large effect of time point as expected. The data show that the groups did not differ at the first time point, and the difference at the second (though appreciable in percentage terms) could have arisen by chance because of the wide variation in the numbers of hours of practice the learners had.

Table 11: Mean private practice hours by group and time point

Group	TP1	TP2
Control	2.1	14.2
Treatment	2.3	13.0

Overall, the results show that the new syllabus and process had no significant effect on the number of hours of driving instruction or private practice learners had before passing their practical driving test. Because the treatment group learners were accessed slightly earlier than control learners, they actually had slightly more contact with their ADI between time points. The difference of 1.2 hours in private practice at TP2 is not statistically significant and has arisen from wide variation in this variable. In addition, the syllabus and process had no significant impact on the length of time learners took to pass either their theory or their practical test.

3.4.3   Effects on theory test and hazard perception test scores

Table 12 shows theory test data[14] obtained from DSA for those participants who provided their driver number while in the study (81 participants in the control group, and 91 in the treatment group). The groups did not differ on either measure, meaning that the new syllabus and process did not have any impact on theory test score or hazard perception score in the theory test.

Table 12: Mean multiple-choice and hazard perception component scores from the theory test by group

Group	Multiple choice score	Hazard perception score
Control	46.7	56.0
Treatment	47.1	55.0

3.4.4   Effects on other scales

All the other scales used in the study fell into the following categories, all of which relate either conceptually or empirically to accident risk:

- Measures of attitudes towards various risk-related behaviours (DAQ, DAQ drink driving, mobile phone items, seat belt items)

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[14] Data were used from the theory test that candidates passed. Note that there was no significant difference between the groups on number of attempts.

- Measures of self-reported behavioural intentions relating to future driving (DBQ violations, speed photos, photo-animations measuring close following, overtaking and gap acceptance, thrill-seeking items from DSI)

- Measures of self-perceived skill or accident likelihood compared with other drivers (two single items)

- Measures of general attitudes to risk (attitudes to risk scale)

- The sleep hygiene measure

- The adaptation test

- Worry about accidents

The basic pattern of results that would be expected if the treatment group was changing on these measures over the course of learning to drive (more so than the control group) is a statistically significant interaction between the effect of time point and the effect of group; this would show that the change in the treatment group was different to any change seen in the control group.

No statistically significant interactions were found on any of these measures. Some group effects and some time-point effects were found on some of the measures, and in some cases interaction terms did approach statistical significance. The power to detect interaction terms in the statistical procedures used in repeated measures designs can be low, and group/time-point differences may themselves be instructive. Therefore these findings are all outlined in the sub-sections below for consideration. Additionally, in Section 3.5 we ask if the pattern of results taken as a whole suggests any overall treatment effect.

3.4.4.1   DAQ drink driving items

Table 13 shows mean scores on the DAQ drink drive sub-scale by time point and group. Initial analysis showed that the effects of time point and group were non-significant, while the interaction approached significance (p=0.07). Moreover, when one examines the effect of time point for each group separately, the attitudes in the control group remain at the same level while in the treatment group they get safer (p=0.01). Although the interaction is not quite statistically significant at the level we have adopted, there is a clear indication here of an effect on this measure.

Table 13: Mean DAQ drink driving scores by group and time point

Group	TP1	TP2
Control	2.39	2.39
Treatment	2.40	2.25

3.4.4.2   Accident consequences

Table 14 shows the mean score on the 'worry about accident consequences' scale by group and time point. Note that unlike with other scales in the study, it is not clear whether a low or high score on this scale is desirable, or indeed what the relationship would be with accident risk if one were found to exist (e.g. linear, u-shaped). Initial analysis showed that the effects of time point and group were non-significant, while the interaction approached significance (p=0.07). Although when one examines the effect of

time point separately for each group, no statistically significant differences are found, the near-significance of the interaction indicates the possibility of an effect on this measure which requires further consideration.

Table 14: Mean score on the 'accident consequences' scale by group and time point

Group	TP1	TP2
Control	3.38	3.21
Treatment	3.45	3.48

3.4.4.3   Self-rated skill and accident likelihood compared with other drivers

Table 15 and Table 16 show the mean self-rated skill, and likelihood of being in an accident, both when compared with the average driver. Note that a lower score on the former of these, and a higher score on the latter, can be seen as desirable from a road safety perspective. This is because generally it has been found that overconfidence in novice drivers can lead to risk taking.

Analysis of the skill data showed that the effects of time point and group were statistically significant ($p<0.001$ and $p=0.023$ respectively), while the interaction was non-significant. This shows that both groups increase their estimate of their skill compared with the average driver over the course of learning to drive. The difference between groups is present at both time points, and therefore seems unlikely to be due to the new syllabus and process. Indeed it may be related to group differences in thrill-seeking (while driving) and general attitudes to risk (see Sections 3.4.4.4 and 3.4.4.5).

Table 15: Mean self-rated skill when compared with the average driver

Group	TP1	TP2
Control	5.38	5.96
Treatment	4.68	5.69

Analysis of the accident likelihood data showed that the effect of group was significant ($p=0.041$), while the effect of time point and the interaction term were both non-significant. Again it is possible that the difference between groups is related to group differences in thrill-seeking (while driving) and general attitudes to risk.

Table 16: Mean self-rated likelihood of being in an accident when compared with the average driver

Group	TP1	TP2
Control	4.57	4.58
Treatment	5.18	4.88

3.4.4.4   Thrill-seeking while driving

Table 17 shows the mean score on the thrill-seeking items from the Driver Stress Inventory, by group and time point. Analysis showed that the effect of time point was significant ($p=0.02$) while the group effect approached significance ($p=0.074$). The

interaction term was non-significant. The data suggest that both groups increased their intentions to use driving as an outlet for their thrill-seeking tendencies as they progressed through the learning to drive process. The mean scores here seem to suggest that the increase was larger in the treatment group than in the control group. Although the interaction term is non-significant, when the effect of group is examined separately for each time point the group scores do not differ significantly at TP1, but the treatment group score is significantly higher than the control group at TP2 (p=0.044). As with the DAQ drink-driving data, although the interaction is not quite statistically significant at the level we have adopted, there is a clear indication here of an effect on this measure.

Table 17: Mean thrill-seeking score from Driver Stress Inventory by time point and group

Group	TP1	TP2
Control	2.51	2.71
Treatment	2.88	3.36

3.4.4.5   General attitudes to risk

Table 18 shows the mean score on the two sub-scales of the general attitudes to risk measure (risky behaviours, and behaviours that are disapproved of by others). The analysis showed that for both sub-scales the group effect was significant (p=0.01), while the effect of time point and the interaction term were both non-significant. Overall, the data suggest that the treatment group had slightly more positive (i.e. less safe) attitudes to risk than the control group, but that this difference existed at TP1 and TP2.

Table 18: Mean score on the general attitudes to risk (risky behaviours, and behaviours not approved of) by time point and group

Group	Risky		Disapproved	
	TP1	TP2	TP1	TP2
Control	1.88	1.91	1.53	1.58
Treatment	2.12	2.17	1.76	1.72

3.4.4.6   Picture speed test

Table 19 shows the mean speeds on the speed picture test by group and time point. Analysis showed that the effect of time point was significant (p<0.001) while the effect of group and the interaction were non-significant. The data suggest that all learners, as they progressed through the learning to drive period, reported that they would choose higher average speeds in the scenes shown.

Table 19: Mean speed (mph) on the speed picture test by time point and group

Group	TP1	TP2
Control	43.9	45.4
Treatment	43.5	45.2

3.4.4.7 Photo-animation measure of close following

Table 20 shows the mean score on the photo-animation measure of close following by group and time point. Analysis showed that the effect of time point was significant (p<0.001), as was the effect of group (p=0.013). The interaction was non-significant. The data suggest that all learners, as they progressed through the learning to drive period, reported a reduction in risk in terms of the following distance they report intending to choose when driving (i.e. they pick a slightly larger following distance at TP2 than at TP1). The treatment group are more risky than the control group but this difference existed at TP1 and TP2.

Table 20: Mean score on the close following photo animation measure by time point and group

Group	TP1	TP2
Control	6.9	6.1
Treatment	7.8	7.0

3.4.4.8 Photo-animation measure of overtaking

Table 21 shows the mean score on the photo-animation measure of overtaking by group and time point. Analysis showed that the effect of time point was significant (p<0.001), while effect of group and the interaction term both approached significance (p=0.074 and p=0.085 respectively). The data suggest that all learners, as they progressed through the learning to drive period, reported a reduction in risk in terms of their self-reported intentions related to overtaking (i.e. they pick a slightly larger headway at TP2 than at TP1 as representing the riskiest overtake they would be willing to attempt). The fact that the interaction term approaches significance suggests a clear indication of an effect on this measure; the treatment group appears to be more risky than the control group at TP1 but this difference has largely disappeared by TP2.

Table 21: Mean score on the overtaking photo animation measure by time point and group

Group	TP1	TP2
Control	7.1	6.0
Treatment	8.3	6.4

3.5 Considering the results as a whole

Although none of the effects that could be attributed to the new syllabus were statistically significant taken by themselves, it is still possible to examine the set of findings as a whole to try and establish whether there is an overall trend indicating a treatment effect.

The starting point for such an analysis is that with multiple comparisons, if there were absolutely no effect of the treatment (i.e. completely random data) then we would expect the p-values associated with these comparisons to be distributed over the interval $(0,1)$ in a way that is consistent with the null hypothesis of a uniform distribution. If on the other hand there is a pattern in the data indicating a treatment effect, we would expect to see a shift in the distribution of p-values towards the lower end of the interval.

This can be tested statistically in the following way. First, for each relevant p-value the natural logarithm is calculated. Each of these is then multiplied by -2, and the sum of this is treated as a value of *chi-squared* with 2n degrees of freedom (where n is the number of p-values). The level of statistical significance associated with this *chi-squared* value is then taken as an indication of the strength of the overall pattern of results suggesting a treatment effect (Fisher, 1938).

The critical value of *chi-squared* for 48 degrees of freedom at the 5% level of significance is 65.17, while for 10% it is 60.91. The value obtained in the analysis described above (using the 24 p-values associated with comparisons related to the effects of new syllabus) is 61.76, which is close to statistical significance (having a p-value of below 0.10).

Unfortunately, although a pattern suggesting an overall treatment effect is found by this analysis, when the direction of effects is considered no consistent safety benefit is evident. This is because a number of findings form a pattern consistent with a safety benefit (most notably 'DAQ drink drive' and 'overtaking photo animation') while a number of others form a pattern consistent with a safety disbenefit (most notably 'thrill-seeking DSI', and 'self-rated skill relative to the average driver').

3.6 Summary of results

In no case was a statistically significant interaction found that would indicate an effect of the new syllabus and process on treatment group learner drivers, above and beyond what was seen in the control group learners. Thus none of the effects on the outcome variables that could be attributed to the new syllabus and process were able to be established at the adopted level of statistical significance. For those measures taken only at TP2, a similar pattern emerged; no statistically significant group differences were found on any measure that might be expected to indicate a safety effect (notably hazard perception scores, and the number of hours of private practice).

There are effects observable in the data but these are associated either with pre-existing differences between the groups (for example general attitudes to risk, self-rated skill and accident likelihood compared with the average driver) or to changes over the learning to

drive period for both groups (for example an increase in speeds given in the speed test)[15].

Although none of the comparisons associated with the new syllabus was statistically significant taken by itself, the pattern evident in the results taken together does indicate a potential effect of the syllabus overall (as delivered by ADIs in this study). However when some individual measures are examined in more detail post-hoc (for example where interactions approach significance or where interesting group and time point differences are found) it can be seen that for some measures patterns in the data suggest a positive effect of the new syllabus and process, while for others such patterns suggest a negative one. Thus the findings do not suggest a consistent effect of the treatment.

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[15] Although not reported here, checks on the data also showed expected gender differences on many of the scales used, including those that did not show up as significant at all in the main design. An example of this is the DBQ violations sub-scale on which, as expected, males score higher than females. This further supports the idea that the lack of any treatment effects in the dataset is due to the lack of the treatment having any effect, rather than due to a lack of sensitivity in the measures used.

4 Discussion, conclusions and recommendations

4.1 The overall learning to drive evaluation study – an evidence based approach

The current report addressed the following research question in a summative evaluation of the new learning to drive syllabus and process:

- What is the initial impact of the new syllabus and process on learner drivers' attitudes and reported behavioural tendencies and intentions?

A previous report (McWhirter et al., 2012) addressed the following research questions in a formative evaluation of the new syllabus and process:

- How do learner drivers engage with the new learning to drive syllabus?

- Can ADIs deliver the full syllabus and do so in a way that empowers learner drivers to take ownership of the learning process?

- How do supervising drivers engage with the new learning to drive syllabus?

- What changes are required to the training of ADIs and/or supporting tools included in the syllabus to ensure its successful implementation when rolled out in a subsequent, large scale evaluation stage?

Taken together, the current report and that of McWhirter et al. (2012) represent a commitment to the DSA's position of ensuring that the proposals being developed for modernising learning to drive in GB are based on sound research evidence (DSA, 2008).

This is of crucial importance, since almost all of driver training and education as it has been carried out in the past has been shown to be ineffective in improving driver safety, and some studies have even demonstrated harm from such interventions (see Helman et al., 2010 for some examples, and for a recent example see Glendon, Chalmers, Jarvis & Salisbury, 2012).

4.2 Summary of formative evaluation findings

Mcwhirter et al. (2012) concluded on the basis of largely qualitative (and some quantitative) data that ADIs welcomed the new syllabus and process in principle, and that learners who experienced the new process (when compared with those who experienced the existing learning to drive process) felt that they had taken ownership of learning to drive, and felt that they had experienced discussion of a wider range of road safety topics, as expected from the new syllabus.

Some areas for improvement were recommended by McWhirter et al. (2012). For example it was concluded that ADIs did experience some difficulty in getting through all of the workbook scenarios with all of their learners, and that the actual experience of the learning to drive process varied, even within the treatment group. It was also noted that ADIs did not report great success in promoting additional private practice through contact with supervising drivers.

McWhirter et al. (2012) concluded that even if the new syllabus and process was not being delivered with perfect fidelity, learners in the treatment group were willing to engage with the new syllabus and process, and that their experience of the learning to drive process was qualitatively different to that experienced by control group learners.

This view is supported by the quantitative data in this report; ADIs in the treatment group gave significantly different accounts of the process used with their learners (when compared with responses from the control group ADIs). Treatment ADIs reported using the techniques they had been trained to use more often than did those ADIs in the control group, and reported more positive attitudes to what learners should expect from the learning to drive process.

4.3   Summary of summative evaluation findings

The new syllabus and process did not have any impact on the length time or driving experience undertaken in learning to drive. The time taken to pass the theory test and practical test (from the commencement of learning), and the number of hours of driving tuition and private practice did not differ significantly between the control and treatment groups.

In addition, none of the effects on the outcome variables that could be attributed to the new syllabus and process were able to be established at the adopted level of statistical significance.

Although some statistically significant differences in the data were apparent, these were associated either with time or learning effects for all learners, or with apparently pre-existing differences between the treatment and control groups (i.e. differences that were present early in the learning process as well as at the end). It should be noted that for the initial data collection, learners were accessed early in their learning to drive process but not before an average of 5.6 or 7.4 hours of tuition (treatment group and control group respectively). It might therefore be tempting to ascribe overall group differences to early treatment effects that persisted until the end of learning to drive. However given the previous evidence from around the world demonstrating that driver training effects typically do not occur (even with much larger intervention doses than this) this does not seem plausible. There also remains the difficulty that a number of group differences in the current dataset seem to suggest a safety benefit of the new syllabus and process, while a number seem to suggest a safety disbenefit.

In short, the various indications that are reported here of possible impacts (positive or negative) on safety related measures in the learner drivers tested are not yet clearly enough established for it to be evident what the prospects are for the new syllabus and process to make newly-qualified drivers safer. This conclusion is reinforced when it is considered that the current study evaluated the impact of the new syllabus and process when delivered by highly motivated and appropriately trained ADIs who appeared to have understood and implemented the training at a level observable in both qualitative and quantitative measures. If no clear safety effect is observed with this group, then it seems unlikely that one would be observed in a much more diverse group of ADIs.

4.4   Recommended next steps

On the basis of the findings in the overall learning to drive evaluation study, the following specific recommendations are made.

1. Although the new learning to drive syllabus and process seems generally acceptable both in principle and in practice to ADIs and to learner drivers, the findings reported here do not provide a justification in terms of a likely road

safety benefit for rolling out the new syllabus and process further in its current form.

2. Any further research or development work with the new syllabus and process should proceed within an *a priori* evaluation framework appropriate for the assessment of its goals.

On the basis of the wider evidence base relating to interventions to increase novice driver safety, we also make the following more strategic recommendation:

3. Alternative approaches (i.e. other than training and education) to improving young novice driver safety should be considered. This would be in keeping with the DSA's commitment to evidence-based practice, and to continue monitoring evidence from other countries on approaches that seek to increase regulation and use post-test restrictions (DSA, 2008). Some such approaches are widely supported by evidence as being effective in improving the safety of young novice drivers (see for example Parker, 2012; Russell et al., 2011; Gregersen et al., 2000).

A final recommendation relates to the wider approach that DSA should continue to take in assessing further attempts to improve road safety for novice drivers. In short, an evidence-based approach (represented by the current study) to any planned changes to driver training and testing in Great Britain should be continued.

By assessing effectiveness of incremental changes in appropriately designed trials on modest scales as in the current study, the likely effects (positive or negative) of interventions can be ascertained before wide exposure in the population, and informed decisions on the most effective use of resources available can be made. When proven interventions are rolled out on a wide scale, further evaluation can then help interventions to be delivered effectively, and to achieve good return on investment.

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Appendices

Appendix A Procedure for random allocation of ADIs to treatment and control groups

Description of method used to assign ADIs who have expressed an interest in taking part in the trial to either treatment or control groups.

Shaun Helman

15/06/10

This procedure was designed to be completely free from bias when assigning ADIs to treatment and control groups, while at the same time deliberately balancing as closely as possible the numbers of different 'grade' ADIs in each group also.

1. The DSA supplied the details of 159 ADIs who had expressed an interest in taking part in the trial. The details were supplied in an Excel spread sheet.

2. Of these, 94 were check-test grade 4, 55 were grade 5, and eight were grade 6. Two stated that they had no check-test grade and were therefore excluded.

3. The ADIs were split into grade 4s, 5s and 6s.

4. A random number between 1 and 2 was generated next to each ADI in the spread sheet, using the formula '=INT(2*RAND())+1'.

5. In an adjacent column '1' was defined as 'treatment' and '2' as 'control', using the formula '=IF(CELL=1,"Treatment", "Control")' where 'CELL' refers to the relevant adjacent cell in which the '1' or '2' appears.

6. For each grade of ADI in turn, the numbers calculated in step 4 were updated (the function is 'volatile' and therefore it updates every time the spread sheet recalculates) until there were equal numbers (or as close as possible) of 1s and 2s.

7. When the equality of numbers in each group was reached, the values were 'frozen' through cutting and pasting them 'as values' (thus removing volatility).

8. Note that this process was 'witnessed' by two members of TRL staff (Shaun Helman and Rebecca Hutchins), and while the process was followed, the only details visible on the screen were the random numbers and two cells that counted the number of each category. Thus the personal details of ADIs could not have played any part in the decision when to 'freeze'.

9. The entire process resulted in 47 treatment and 47 control participants for grade 4 ADIs, 27 treatment and 28 control participants for grade 5 ADIs, and four of each for grade 6 ADIs.

10. The 1s and 2s in each grade were then sorted into a new random order using a random number calculated using the formula '=RAND()', in an adjacent column.

11. This new ordering was then frozen through cutting and pasting the entire spread sheet 'as values', and the spread sheet was sent to DSA with the below instructions regarding recruitment.

Instructions for recruitment of ADIs based on TRL spreadsheet "ADI group assignment file for DSA.xls"

Notes:

1. The spread sheet contains one worksheet, entitled 'Final random assignment'.

2. This worksheet contains all the ADIs who had expressed an interest in taking part in the study. The data are as delivered to TRL by DSA, and include check-test grade (column 'K'), and also now include a 'Group' column (column 'L').

3. The ADIs are sorted by check test grade (4, 5, 6) and then by whether they are to be recruited to the treatment group (those ADIs who will receive the training in June and July to teach the new syllabus) or the control group (those ADIs who will not receive the training until the end of the trial. There are:

    a. 94 grade 4 ADIs (rows 2 to 95 inclusive)

    b. 55 grade 5 ADIs (rows 100 to 154 inclusive)

    c. eight grade 6 ADIs (rows 159 to 166 inclusive)

    d. There are two additional ADIs who did not have a check test grade listed (rows 167 and 168). These two have been excluded from the process of group assignment, and should therefore not be recruited.

4. For each check test grade, half of the ADIs have been assigned as 'treatment' and half as 'control' (in the case of grade 5 ADIs there is an odd number, and hence there is one extra control participant).

The following procedure should be followed when recruiting:

The target sample is 50 ADIs in the treatment group, and 50 in the control group. If possible we would like a balance between grade 4s and grade 5/6s. Obviously there are more than 100 ADIs in the spread sheet (there are actually 157) – this means we have some ADIs who will not get to take part at all. However this means that we should be able to achieve our target sample of 100 (50 treatment, 50 control) even if some of the 157 who have stated their interest change their mind at this stage.

Here is the recruitment procedure. It is very important that the below is followed by the letter please, as the scientific integrity of the trial depends on utterly random group assignment:

1. Contact treatment ADIs who are grade 4 **in the order they are listed on the sheet**. It is essential that you use the order in the sheet, as this has been determined randomly to be free from any kind of bias.

2. Every time you manage to recruit a grade 4 treatment group ADI, use the same procedure (i.e. contact them in the order they are listed) to recruit a grade 4 control group ADI. Do not recruit a control ADI without first recruiting a treatment ADI; this will help to ensure that we have the same number of ADIs from each grade in each of the treatment and control groups.

3. Continue in this way with the grade 4 ADIs until you have recruited **25** grade 4 treatment ADIs, and **25** grade 4 control ADIs, or until you run out of grade 4 ADIs in either (or both) of the treatment or control lists.

4. Now follow steps 1, 2 and 3 but for grade 5 ADIs, and until you have recruited **21** grade 5 treatment ADIs and **21** grade 5 control ADIs, or until you run out of grade 5 ADIs in either (or both) lists.

5. Now follow steps 1, 2 and 3 but for grade 6 ADIs, and until you have recruited **four** grade 6 treatment ADIs and **four** grade 6 control ADIs, or until you run out of grade 6 ADIs in either (or both) lists.

6. If you have any shortfall in grade 6 ADIs, try to fill them with remaining grade 5 ADIs first, and then remaining grade 4s.

7. If you have any shortfall in grade 5 ADIs, try to fill them with remaining grade 6 ADIs first, and then remaining grade 4s.

8. If you have any shortfall in grade 4 ADIs, try to fill them with remaining grade 5 ADIs first, and then with remaining grade 6 ADIs.

Remember:

In all cases, contact ADIs in the order they are listed.

If anyone wishes to discuss this procedure, please contact:

Shaun Helman

TRL

01344 77 0650

shelman@trl.co.uk

Appendix B Participant information sheet for learner drivers

Learning to Drive Study

Participant Information Letter

Thank you for your interest in this research.

The DSA wants to understand more about what it is like to learn to drive. To achieve this, TRL has been asked to explore the opinions and perceptions of a group of learner drivers as they go through the process of learning to drive.

If you decide to take part in this study, you will be asked to complete an online questionnaire after you have had no more than a few driving lessons and you may be asked to complete another when you pass your practical driving test. You may also be invited to take part in a discussion group with other learner drivers in your area.

We may keep in touch with you, by email or phone, at 2 or 3 monthly intervals to give you updates on the study.

To say "thank you" for taking part, we will give you £20 for each completed questionnaire and if you take part in a discussion group, we will give you another £35 for that. You will be required to complete a claim form for auditing purposes.

For your information, all personal data relating to volunteers is held and processed in the strictest confidence, and in accordance with the Data Protection Act (1998). The results of this study may be published, but it will not be possible to identify any individual from the report or results.

You are also free to withdraw from the study at any time without needing to justify your decision and without prejudice.

If you are taking any practice sessions with a **supervising driver** (family member/ friend/ partner), we'd also value their opinions and are offering them the chance to take part in a telephone interview for which they will be given £20; please let us know if they're interested!

To confirm that you wish to sign up for this research, please complete the consent form and we will send you the link and password for you to complete the first online questionnaire.

If you have any questions, please email me at drivertrial@trl.co.uk or you can leave a message on our dedicated phone line on 01344 770324.

Kind regards,

The Project Team

Dr Shaun Helman   Su Buttress
Dr Neale Kinnear   Rebecca Hutchins

Appendix C Weekly Sample Frame criteria

At the beginning of the study, the only requirement for learner drivers taking part in the study was that they had taken part in no previous formal driver training before joining their current ADI. Later in the project, the sampling frame used was monitored on a weekly basis and changes made to ensure that the people being accepted onto the study would result in a final sample that was as closely matched as possible to the gender (and as far as was possible, age) of the population of drivers presenting for test in GB.

The notes below show the changes made throughout the study.

Week 13 - week 21 (28/03/10 to 29/05/10)

1. All new learners who were female and 17 were excluded from being signed up.
2. All new learners who were female and aged between 21 and 30 were excluded from being signed up.
3. Any learners recruited in the older two age groups were allowed up to four hours of previous training (learners in other age groups were still allowed none).

Week 22 – 25 (30/05/10 to 26/06/10)

1. All new learners who were female and 17 were excluded from being signed up for the treatment group only.
2. All new learners who were female and aged between 21 and 30 were excluded from being signed up.
3. Any learners recruited in the 31+ age group were allowed up to four hours of previous training (learners in other age groups were still allowed none).

Week 26 – 27 (27/06/10 to 10/07/10)

1. All new learners who were female and 17 were excluded from being signed up for the control group only.
2. All new learners who were female and aged between 21 and 30 were excluded from being signed up.
3. Any learners recruited in the 31+ age group were allowed up to four hours of previous training (learners in other age groups were still allowed none).

Week 28 (11/07/10 to 17/07/10)

1. All new learners who were female and 17 were excluded from being signed up for the control group only.
2. All new learners who were female and aged between 21 and 30 were excluded from being signed up.
3. Any learners recruited in the 31+ age group were allowed up to four hours of previous training (learners in other age groups were still allowed none).

Week 29 – 31 (18/07/10 to 07/08/10)

1. All new learners who are female and 17 were now allowed to be recruited.
2. All new learners who were female and aged between 21 and 30 were still excluded from being signed up.
3. Any learners recruited in the 31+ age group were allowed up to four hours of previous training (learners in other age groups were still allowed none).

Week 33 – 39 (15/08/10 to 02/09/10)

1. Recruited learners of all ages and genders.
2. Any learners recruited in the 31+ age group were allowed up to four hours of previous training (learners in other age groups were still allowed none).

Appendix D ADI questionnaire measure

Note that control group ADIs were given a questionnaire containing only Sections A and C.

DSA
DRIVING STANDARDS AGENCY
SAFE RIDING FOR LIFE™

We would like to ask you some questions about your experience as an Approved Driving Instructor (ADI) since you joined the Learning to Drive Trial. Please answer as accurately and as frankly as you can so that we can represent your views and opinions. No names or identification numbers will be used in the reporting of the results.

We realise the questionnaire will take a little while to complete, but your answers are important for the success of the trial. We really appreciate you spending the time required to give us insight into your personal experiences and opinions.

Please do not send the questionnaire on to other ADIs that you know, or publish it anywhere. We will ensure that the questionnaire is distributed to all ADIs within the trial.

ADI QUESTIONNAIRE

Please complete the questionnaire by ticking the appropriate box like this ☑, circling the appropriate numbers like this ④, or writing in the spaces provided.

SECTION A: You and your learner drivers

1. How many learner drivers are you currently working with? ☐☐☐ drivers

2. Approximately how many learner drivers have you worked with since September 2010 ☐☐☐ drivers

3. Do you consider that you use any of the following methods or approaches with your learner drivers?
   (**Please tick all that apply**)

   Instruction ☐1
   Coaching ☐2
   Client centred learning ☐3
   Other (please specify in the text box below) ☐4

1

4. Thinking of your learner drivers in the last 12 months, for how many have you had any contact with a supervising driver (e.g. parent)?

All of them	☐1	
About three quarters of them	☐2	**Please go to question 5**
About half of them	☐3	
About a quarter of them	☐4	
None of them	☐5	**Please go to question 6**

5. Please indicate the nature of your contact with supervising drivers.
(**Please tick all that apply**)

I was encouraging more private practice ☐1
I was encouraging supervising drivers to use the same methods I use ☐2
I was encouraging supervising drivers to discuss road safety risks with the learner driver ☐3
I was discussing finance and payment for lessons ☐4
I was discussing lesson planning ☐5
I was responding to some questions from the supervising drivers ☐6
I was promoting the importance of post-test lessons ☐7
Our contact related to something else (please specify in the text box below) ☐8

6. Please indicate your agreement with the following statements.

(Please select **one** number on **each** line)	Strongly Disagree				Strongly Agree
a. I take the same approach and use the same methods with practically all my learner drivers	1	2	3	4	5
b. Different learner drivers require different approaches to learning	1	2	3	4	5
c. Most of the time, learner drivers simply need to be told what to do	1	2	3	4	5
d. Learner drivers should be encouraged to work things out for themselves	1	2	3	4	5

2

6. Please indicate your agreement with the following statements.

(Please select **one** number on **each** line)	Strongly Disagree				Strongly Agree
e. My main goal is to get drivers test-ready as quickly as possible	1	2	3	4	5
f. Learner drivers just want to get test-ready as quickly as possible and are not interested in how that happens	1	2	3	4	5
g. I find learner drivers do better when I use my own methods	1	2	3	4	5
h. Learner drivers mainly need experience, it doesn't really matter what I teach them	1	2	3	4	5
i. Learner drivers have to take ownership of their learning to become better drivers	1	2	3	4	5
j. Learner drivers need to be able to reflect on their driving to become better drivers	1	2	3	4	5
k. Learner drivers need to develop awareness and responsibility to become good drivers	1	2	3	4	5
l. Learner drivers need to develop awareness and responsibility to pass the practical driving test	1	2	3	4	5
m. When a learner driver makes a mistake the ADI should tell them what they did wrong	1	2	3	4	5
n. Learner drivers need to set their own aims and objectives to learn effectively	1	2	3	4	5

7. Have you participated in any advanced ADI training (e.g. CPD – Continuing Professional Development) since September 2010?

Yes ☐1
No ☐2

If yes, please specify what further training you have had in this period.

3

SECTION B: The Learning to Drive workbook

We would like to get your feedback on the Learning to Drive workbook. Again, please answer as accurately and as frankly as you can so that we can represent your views and opinions.

8. How many of your learner drivers do you/will you use the DSA workbook with?

All of them	☐₁	**Please go to question 10**
About three quarters of them	☐₂	
About half of them	☐₃	**Please go to Question 9**
About a quarter of them	☐₄	
None of them	☐₅	

9. Please indicate why you do not use the workbook with all of your learner drivers?

(Please tick all that apply)

I think it takes too much time ☐₁
My learner drivers think it takes too much time ☐₂
My learner drivers do not engage with it and do not complete their tasks ☐₃
There are sections in the workbook that I do not like ☐₄
There are sections in the workbook that my learner drivers do not like ☐₅
The workbook is not suitable because some of my learner drivers have already had lessons ☐₆
I think I would lose business if I used it with all learner drivers ☐₇
My learners do not want to use it because their friends do not have to with other ADIs ☐₈
Other reason(s) (please specify) ☐₉

4

10. Please indicate how frequently you use the following sections of the workbook with your learner drivers.

(select **one** number on **each** line)	Never				With all my learners
a. The Learning Agreement	1	2	3	4	5
b. Section 1.1 Crash Types	1	2	3	4	5
c. Section 1.2 What the Law Requires	1	2	3	4	5
d. Section 1.3 Seatbelts	1	2	3	4	5
e. Section 1.4 Good Driver	1	2	3	4	5
f. Section 1.5 You GROW plan	1	2	3	4	5
g. Section 1.6 Vulnerable Road Users	1	2	3	4	5
h. Section 2.1 Eco-safe driving	1	2	3	4	5
i. Section 2.2 Route planning	1	2	3	4	5
j. Section 2.3 Self Assessment	1	2	3	4	5
k. Section 2.4 Journey context and Peer Pressure	1	2	3	4	5
l. Section 3.1 Risk-Assessing a Journey	1	2	3	4	5
m. Section 3.2 Fatigue	1	2	3	4	5
n. Section 3.3 Alcohol and Drugs	1	2	3	4	5
o. Section 3.4 Fitness to drive	1	2	3	4	5
p. Section 3.5 Distractions	1	2	3	4	5
q. Section 3.6 Time Pressures	1	2	3	4	5
r. Section 3.7 Stress	1	2	3	4	5
s. Section 3.8 Test Readiness Review	1	2	3	4	5
t. Section 4.1 Emergency Vehicle Quiz	1	2	3	4	5
u. Section 4.2 Crash impact	1	2	3	4	5
v. Section 4.3 Your post-test GROW plan	1	2	3	4	5

5

11. Please indicate how <u>valuable</u> you think each section of the workbook is for the learner driver

(select **one** number on **each** line)	Not at all valuable				Extremely Valuable
a. The Learning Agreement	1	2	3	4	5
b. Section 1.1 Crash Types	1	2	3	4	5
c. Section 1.2 What the Law Requires	1	2	3	4	5
d. Section 1.3 Seatbelts	1	2	3	4	5
e. Section 1.4 Good Driver	1	2	3	4	5
f. Section 1.5 You GROW plan	1	2	3	4	5
g. Section 1.6 Vulnerable Road Users	1	2	3	4	5
h. Section 2.1 Eco-safe driving	1	2	3	4	5
i. Section 2.2 Route planning	1	2	3	4	5
j. Section 2.3 Self Assessment	1	2	3	4	5
k. Section 2.4 Journey context and Peer Pressure	1	2	3	4	5
l. Section 3.1 Risk-Assessing a Journey	1	2	3	4	5
m. Section 3.2 Fatigue	1	2	3	4	5
n. Section 3.3 Alcohol and Drugs	1	2	3	4	5
o. Section 3.4 Fitness to drive	1	2	3	4	5
p. Section 3.5 Distractions	1	2	3	4	5
q. Section 3.6 Time Pressures	1	2	3	4	5
r. Section 3.7 Stress	1	2	3	4	5
s. Section 3.8 Test Readiness Review	1	2	3	4	5
t. Section 4.1 Emergency Vehicle Quiz	1	2	3	4	5
u. Section 4.2 Crash impact	1	2	3	4	5
v. Section 4.3 Your post-test GROW plan	1	2	3	4	5

12. Have you adapted any sections of the workbook for use with your learner drivers? For example, have you made up your own scenarios rather than use those given in the workbook?

Yes ☐1
No ☐2

If Yes, please specify what you have adapted.

6

CPR1515

13. Other than the workbook are there any materials that you use in the car with your learner drivers?

Yes ☐1
No ☐2

If Yes, please identify what other materials you use.

14. If you have contacted your DSA mentor, please indicate how useful you have found this service?

Extremely useful ☐1
Very useful ☐2
Somewhat useful ☐3
Not very useful ☐4
Not at all useful ☐5

I have not contacted my mentor at all ☐6

SECTION C: ABOUT YOU

Your answers will only be identifiable to the TRL researchers via your ADI identification number; the DSA will not be able to identify individual answers from our reporting as no names or identification numbers will be used in the reporting of the results.

15. What is your ADI number?

16. Are you:

Male ☐1   Female ☐2

17. What is your age? ___ years

18. What is your ADI level?

4 ☐1
5 ☐2
6 ☐3

Thank you for completing the questionnaire.

7

Appendix E Online questionnaire measure (paper version 1)

Learner Driver Questionnaire -1

This questionnaire should take around an hour to complete. Please set aside time to complete the survey in one sitting, and please avoid being distracted when you are completing the survey.

In all cases, we want your HONEST ANSWERS. There are no 'right' or 'wrong' answers – we just want you to respond with your own honest opinions.

Each page has a different question or set of questions with their own instructions, so simply follow these as you go through the questionnaire. There are several different types of question. For some you simply need to tick a box to indicate your answer - for example, to indicate how much you agree or disagree with a given statement. In other cases you need to enter numbers (for example the speed at which you think you would drive in a given situation).

The important thing is that each page has its own instructions, which you can follow as you go through the questionnaire.

At the end of the survey, please fill in the enclosed claim form and return it in the envelope provided (no stamp is required). We will then send you £20 as a thank you.

If you have any questions, please do not hesitate to contact us on 01344 770324 or at drivertrial@trl.co.uk.

Participant Number ☐ ☐ ☐ ☐

Please answer the questions below about yourself and your driving experience so far.

Q1 Please state your age   ☐ years   ☐ months

Q2 Are you: ☐ male   ☐ female

Q3 How many hours of driving lessons have you had so far with your **driving instructor**? *(Do not worry if you cannot give an exact answer – just estimate as best you can)*   ☐ hours

Q4 How many hours of driving practice have you had so far with **friends and family**? *(Do not worry if you cannot give an exact answer – just estimate as best you can)*   ☐ hours

Q5 Have you taken your theory test?   ☐ yes   ☐ no

Q6 If yes, please enter the date (dd/mm/yy)   ☐ ☐ ☐

Please answer the following questions by placing a tick in the appropriate box:

Q7 How likely do you think you are to be involved in accidents in the future compared with the average driver?

Much less likely	About the same	Much more likely
☐1 ☐2 ☐3 ☐4 ☐5	☐6 ☐7 ☐8	☐9 ☐10 ☐11

Q8 How skilful do you think you are compared with the average driver?

Much less skilful	About the same	Much more skilful
☐1 ☐2 ☐3 ☐4 ☐5	☐6 ☐7 ☐8	☐9 ☐10 ☐11

2

Below is a picture of a road situation. Imagine that you have passed your driving test.

Q9 At what speed do you think you would chose to drive in this road situation?

miles per hour (*please enter the speed*)

3

Q10 Below are some statements about various things to do with driving. Please indicate how much you agree or disagree with each statement by placing a tick in the appropriate box on the scale.

	I strongly disagree	I disagree	I neither agree or disagree	I agree	I strongly agree
Some people can drive perfectly safely after drinking three or four pints of beer	☐1	☐2	☐3	☐4	☐5
People stopped by the police for close-following are unlucky because lots of people do it	☐1	☐2	☐3	☐4	☐5
I would welcome further use of the double white lines to let me know when it is unsafe to overtake	☐1	☐2	☐3	☐4	☐5
Speed limits are often set too low, with the result that many drivers ignore them	☐1	☐2	☐3	☐4	☐5
I think the police should start breathalysing a lot more drivers around pub closing times	☐1	☐2	☐3	☐4	☐5
It is quite acceptable to take a slight risk when overtaking	☐1	☐2	☐3	☐4	☐5
Close-following isn't really a serious problem at the moment	☐1	☐2	☐3	☐4	☐5
I know exactly how fast I can drive and still drive safely	☐1	☐2	☐3	☐4	☐5
Some drivers can be perfectly safe overtaking in situations which would be risky for others	☐1	☐2	☐3	☐4	☐5
Even one drink makes you drive less safely	☐1	☐2	☐3	☐4	☐5
I would favour stricter enforcement of the speed limit on 30 mph roads	☐1	☐2	☐3	☐4	☐5
Some people can drive safely even though they only leave a small gap behind the vehicle in front	☐1	☐2	☐3	☐4	☐5
The aim of the police should be to stop as many people as possible overtaking in risky circumstances	☐1	☐2	☐3	☐4	☐5
Even driving slightly faster than the speed limit makes you less safe as a driver	☐1	☐2	☐3	☐4	☐5
It's hard to have a good time if everyone else is drinking but you have to limit yourself because you're driving	☐1	☐2	☐3	☐4	☐5
I would be happier if close-following regulations were more strictly applied	☐1	☐2	☐3	☐4	☐5
Stricter enforcement of speed limits on 30 mph roads would be effective in reducing the occurrence of road accidents	☐1	☐2	☐3	☐4	☐5
Even driving slightly too close to the car in front makes you less safe as a driver	☐1	☐2	☐3	☐4	☐5
I think it is okay to overtake in risky circumstances as long as you drive within your own capabilities	☐1	☐2	☐3	☐4	☐5
The law should be changed so that drivers aren't allowed to drink any alcohol	☐1	☐2	☐3	☐4	☐5

4

Q11 Below are some more statements about various things to do with driving. Please indicate how much you agree or disagree with each statement by placing a tick in the appropriate box on the scale.

	I strongly disagree	I disagree	I neither agree or disagree	I agree	I strongly agree
It is quite acceptable to drive after only one or two drinks	☐1	☐2	☐3	☐4	☐5
On the whole people aren't aware of the dangers involved in close-following	☐1	☐2	☐3	☐4	☐5
Even overtaking in a slightly risky situation makes you less safe as a driver	☐1	☐2	☐3	☐4	☐5
I would be happier if the speed limits were more strictly enforced	☐1	☐2	☐3	☐4	☐5
The aim of the police should be to stop as many drink drivers as possible	☐1	☐2	☐3	☐4	☐5
People stopped by the police for risky overtaking are unlucky because lots of people do it	☐1	☐2	☐3	☐4	☐5
Harsher penalties should be introduced for drivers who drive too close to the car in front	☐1	☐2	☐3	☐4	☐5
It's OK to drive faster than the speed limit as long as you drive carefully	☐1	☐2	☐3	☐4	☐5
I know exactly what risks I can take when I overtake	☐1	☐2	☐3	☐4	☐5
Random breath testing of drivers should be introduced	☐1	☐2	☐3	☐4	☐5
People stopped by the police for speeding are unlucky because lots of people do it	☐1	☐2	☐3	☐4	☐5
I think the stopping distances in the Highway Code are too great for people to take notice of them	☐1	☐2	☐3	☐4	☐5
I would be happier if there was a clamp down on dangerous overtaking	☐1	☐2	☐3	☐4	☐5
Speeding is one of the main causes of road accidents	☐1	☐2	☐3	☐4	☐5
I think I know exactly how much I can drink and still be under the limit	☐1	☐2	☐3	☐4	☐5
It is quite acceptable to drive closer to the car in front than is recommended	☐1	☐2	☐3	☐4	☐5
Sometimes you have to drive in excess of the speed limit in order to keep up with the flow of traffic	☐1	☐2	☐3	☐4	☐5
I would favour a clamp down on drivers who drive too close to the vehicle in front	☐1	☐2	☐3	☐4	☐5
Risky overtaking isn't really a serious problem at the moment	☐1	☐2	☐3	☐4	☐5
The amount of alcohol you're allowed to drink before driving is too high	☐1	☐2	☐3	☐4	☐5

5

Q12   Below is a picture of a road situation. Imagine that you have passed your driving test.

At what speed do you think you would chose to drive in this road situation?

miles per hour (*please enter the speed*)

6

CPR1515

Q13 Below are descriptions of some driving behaviours. How often do you expect to do the following behaviours in future, after you have passed your driving test? Please indicate your answer by placing a tick in the appropriate box on the scale.

	Never	Hardly ever	Occasionally	Quite often	Frequently	Nearly all the time
Drive especially close to the car in front as a signal to its driver to go faster or get out of the way	☐1	☐2	☐3	☐4	☐5	☐6
Become impatient with a slow driver in the outer lane and overtake on the inside	☐1	☐2	☐3	☐4	☐5	☐6
Cross a junction knowing that the traffic lights have already turned against you	☐1	☐2	☐3	☐4	☐5	☐6
Angered by a driver's behaviour, you give chase with the intention of giving him/her a piece of your mind	☐1	☐2	☐3	☐4	☐5	☐6
Disregard the speed limits late at night or very early in the morning	☐1	☐2	☐3	☐4	☐5	☐6
Drive even though you realise you may be over the legal blood-alcohol limit	☐1	☐2	☐3	☐4	☐5	☐6
Have an aversion to a particular class of road user, and indicate your hostility by whatever means you can	☐1	☐2	☐3	☐4	☐5	☐6
Get involved in unofficial 'races' with other road users	☐1	☐2	☐3	☐4	☐5	☐6

7

Below is a picture of a road situation. Imagine that you have passed your driving test.

Q14 At what speed do you think you would chose to drive in this road situation?

| |

miles per hour (*please enter the speed*)

8

Look at the following picture. Imagine that you have passed your driving test.

Q15 In good weather and light traffic, at what speed do you think you would choose to drive along this motorway?

miles per hour (*please enter the speed*)

9

Below is a series of pictures. Each picture depicts you getting closer to the car in front.

Q16 Imagine that you have passed your driving test, and that you are following the car depicted below. Please tick the picture that indicates the distance from the car in front that you feel you would choose to drive at. Assume that you are blocked from overtaking, and that the vehicle in front is travelling at 60mph.

Learner driver questionnaire · 1

11

Below is a picture of a road situation. Imagine that you have passed your driving test.

Q17 At what speed do you think you would choose to drive in this road situation?

miles per hour (*please enter the speed*)

Q18   Below are some statements. Please indicate how well each of the statements describes you by placing a tick in the appropriate box on the scale.

	Not at all	Not very well	Somewhat	Very well
When the water is very cold, I prefer not to swim even if it is a hot day.	$\square_1$	$\square_2$	$\square_3$	$\square_4$
When I listen to music, I like it to be loud.	$\square_1$	$\square_2$	$\square_3$	$\square_4$
I stay away from movies that are said to be frightening or highly suspenseful.	$\square_1$	$\square_2$	$\square_3$	$\square_4$
If I were to go to an amusement park, I would prefer to ride the rollercoaster or other fast rides.	$\square_1$	$\square_2$	$\square_3$	$\square_4$
I would never like to gamble with money, even if I could afford it.	$\square_1$	$\square_2$	$\square_3$	$\square_4$
I like a movie where there are a lot of explosions and car chases.	$\square_1$	$\square_2$	$\square_3$	$\square_4$
In general, I work better when I'm under pressure.	$\square_1$	$\square_2$	$\square_3$	$\square_4$
It would be interesting to see a car accident happen.	$\square_1$	$\square_2$	$\square_3$	$\square_4$
I like the feeling of standing next to the edge on a high place and looking down.	$\square_1$	$\square_2$	$\square_3$	$\square_4$
I can see how it must be exciting to be in a battle during a war.	$\square_1$	$\square_2$	$\square_3$	$\square_4$

13

Look at the following picture. Imagine that you have passed your driving test.

Q19   In good weather and light traffic, at what speed do you think you would choose to drive along this B road in the country?

miles per hour (*please enter the speed*)

14

Below is a picture of a road situation. Imagine that you have passed your driving test.

Q20 At what speed do you think you would choose to drive in this road situation?

miles per hour (*please enter the speed*)

15

Below is a series of pictures. Each picture depicts a car approaching from the right getting closer to you.

Q21   Imagine that you have passed your driving test, and you are waiting to turn left at this junction. The pictures show the view you can see when looking right at the oncoming traffic, which is travelling at 30mph. Please tick the picture which indicates the shortest gap between you and the oncoming vehicle that you would consider pulling out into.

Learner driver questionnaire - 1

17

The following statements are about you and your driving after you pass your test.

Q22 Please rate the extent to which you agree with them by placing a tick in the appropriate box on the scale.

	not at all										very much
	0	1	2	3	4	5	6	7	8	9	10
I would like to risk my life as a racing driver	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
I would like to frighten myself a little while driving	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
I would get a real thrill out of driving fast	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
I would enjoy listening to loud, exciting music while driving	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
I would like to raise my adrenaline levels while driving	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
I would enjoy driving a sports car on a road with no speed limit	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
I would enjoy the sensation of accelerating rapidly	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
I would enjoy cornering at high speed	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
In general I think I will enjoy driving	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐

Below is a picture of a road situation. Imagine that you have passed your driving test.

Q23 At what speed do you think you would choose to drive in this road situation?

miles per hour (*please enter the speed*)

19

Q24 Below are some statements about various aspects of seatbelts and their use. Please indicate how much you agree with each statement by placing a tick in the appropriate box on the scale.

	I strongly disagree	I disagree	I neither agree or disagree	I agree	I strongly agree
It is inconvenient to wear a seat belt	□₁	□₂	□₃	□₄	□₅
I would always wear a seat belt when driving on country roads	□₁	□₂	□₃	□₄	□₅
I often need to be reminded to put my seat belt on when I am a passenger in a car	□₁	□₂	□₃	□₄	□₅
Wearing a seat belt messes up my clothes	□₁	□₂	□₃	□₄	□₅
When I wear a seat belt it cuts into my neck	□₁	□₂	□₃	□₄	□₅
When I get into my car to drive, I put my seat belt on without thinking – it is almost 'automatic'	□₁	□₂	□₃	□₄	□₅
I would never wear a seat belt when driving on residential roads	□₁	□₂	□₃	□₄	□₅
Wearing a seat belt makes me feel trapped/constrained	□₁	□₂	□₃	□₄	□₅
I don't see the need to wear a seat belt when a car has an airbag	□₁	□₂	□₃	□₄	□₅
I would not wear a seat belt if it is only a short trip (e.g. to the local shops)	□₁	□₂	□₃	□₄	□₅
I sometimes find that I have to remind myself to put my seat belt on before driving	□₁	□₂	□₃	□₄	□₅
I would always wear a seat belt when driving on the motorway	□₁	□₂	□₃	□₄	□₅
I find it difficult to reach things in the car when I wear a seat belt	□₁	□₂	□₃	□₄	□₅
Wearing a seat belt is physically uncomfortable	□₁	□₂	□₃	□₄	□₅
When I am a passenger in a car I always put my seatbelt on without thinking about it	□₁	□₂	□₃	□₄	□₅
Seat belts are not made for people my size/height	□₁	□₂	□₃	□₄	□₅

20

Look at the following picture. Imagine that you have passed your driving test.

Q25 In good weather and light traffic, at what speed do you think you would choose to drive along this urban residential main road?

[ ] miles per hour (*please enter the speed*)

21

CPR1515

Below is a picture of a road situation. Imagine that you have passed your driving test.

Q26 At what speed do you think you would choose to drive in this road situation?

miles per hour (*please enter the speed*)

22

Q27 Below are some statements about mobile phones and driving. Please indicate how much you agree or disagree with each statement by placing a tick in the appropriate box on the scale

	I strongly disagree	I disagree	I neither agree or disagree	I agree	I strongly agree
People stopped by the police for speaking on a mobile phone whilst driving are unlucky because lots of people do it	□₁	□₂	□₃	□₄	□₅
Even texting on a mobile phone for a short time makes you less safe as a driver	□₁	□₂	□₃	□₄	□₅
I think that people don't really take any notice of the risks of texting on a mobile phone when driving	□₁	□₂	□₃	□₄	□₅
Speaking on a mobile phone whilst driving isn't really a serious problem at the moment	□₁	□₂	□₃	□₄	□₅
Harsher penalties should be introduced for drivers who text on their mobile phone when driving	□₁	□₂	□₃	□₄	□₅
Some people can drive safely even when they are speaking on a mobile phone at the same time	□₁	□₂	□₃	□₄	□₅
On the whole people aren't aware of the dangers involved in texting on a mobile phone when driving	□₁	□₂	□₃	□₄	□₅
I would be happier if the regulations on speaking on a mobile phone whilst driving were more strictly applied	□₁	□₂	□₃	□₄	□₅
I would favour a clamp down on drivers who text on their mobile phone whilst driving	□₁	□₂	□₃	□₄	□₅
It is quite acceptable to text on a mobile phone whilst driving	□₁	□₂	□₃	□₄	□₅
Even speaking on a mobile phone for a short time makes you less safe as a driver	□₁	□₂	□₃	□₄	□₅
On the whole people aren't aware of the dangers involved in speaking on a mobile phone when driving	□₁	□₂	□₃	□₄	□₅
Harsher penalties should be introduced for drivers who speak on a mobile phone when driving	□₁	□₂	□₃	□₄	□₅
Some people can drive safely even when they are texting on a mobile phone at the same time	□₁	□₂	□₃	□₄	□₅
People stopped by the police for texting on their phone whilst driving are unlucky because lots of people do it	□₁	□₂	□₃	□₄	□₅
I think that people don't really take any notice of the risks of speaking on a mobile phone when driving	□₁	□₂	□₃	□₄	□₅
Texting on a mobile phone whilst driving isn't really a serious problem at the moment	□₁	□₂	□₃	□₄	□₅
It is quite acceptable to speak on a mobile phone whilst driving	□₁	□₂	□₃	□₄	□₅
I would be happier if the regulations on texting on a mobile phone whilst driving were more strictly applied	□₁	□₂	□₃	□₄	□₅
I would favour a clamp down on drivers who speak on their mobile phone whilst driving	□₁	□₂	□₃	□₄	□₅

23

Q28 The following statements are about you and your driving after you pass your test. Please rate the extent to which you agree with each statement by placing a tick in the appropriate box on the scale

	I strongly disagree	I disagree	I neither agree or disagree	I agree	I strongly agree
As a car driver I worry that I will be in an accident	$\square_1$	$\square_2$	$\square_3$	$\square_4$	$\square_5$
As a car driver I worry that I will cause an accident	$\square_1$	$\square_2$	$\square_3$	$\square_4$	$\square_5$
As a car driver I worry about being injured in an accident	$\square_1$	$\square_2$	$\square_3$	$\square_4$	$\square_5$
As a car driver I worry that someone else may cause me to be involved in an accident	$\square_1$	$\square_2$	$\square_3$	$\square_4$	$\square_5$
As a car driver I worry about being killed in an accident	$\square_1$	$\square_2$	$\square_3$	$\square_4$	$\square_5$
As a car driver I worry that I will injure someone else in an accident	$\square_1$	$\square_2$	$\square_3$	$\square_4$	$\square_5$

24

Below is a picture of a road situation. Imagine that you have passed your driving test.

Q29 At what speed do you think you would choose to drive in this road situation?

miles per hour (*please enter the speed*)

25

Look at the following picture. Imagine that you have passed your driving test.

Q30 In good weather and light traffic, at what speed do you think you would choose to along this urban residential main road?

| | miles per hour (*please enter the speed*)

26

Learner driver questionnaire - 1

Q31 Below are some statements. Please indicate how well each of the statements describes you by placing a tick in the appropriate box on the scale

	Not like me				Like me
	1	2	3	4	5
I often think about doing things that are illegal	☐1	☐2	☐3	☐4	☐5
I like the feeling that comes with taking physical risks	☐1	☐2	☐3	☐4	☐5
While I don't deliberately seek out situations or activities that society disapproves of, I find that I often end up doing things that society disapproves of	☐1	☐2	☐3	☐4	☐5
I often do things that I know my parents would disapprove of	☐1	☐2	☐3	☐4	☐5
I consider myself a risk-taker	☐1	☐2	☐3	☐4	☐5
Being afraid of doing something new often makes it more fun in the end	☐1	☐2	☐3	☐4	☐5
The greater the risk the more fun the activity	☐1	☐2	☐3	☐4	☐5
I like to do things that almost paralyse me with fear	☐1	☐2	☐3	☐4	☐5
I do not let the fact that something is considered immoral stop me from doing it	☐1	☐2	☐3	☐4	☐5
I often think about doing things that I know my friends would disapprove of	☐1	☐2	☐3	☐4	☐5

27

CPR1515

Below is a picture of a road situation. Imagine that you have passed your driving test.

Q32 At what speed do you think you would choose to drive in this road situation?

miles per hour (*please enter the speed*)

28

Below is a picture of a road situation. Imagine that you have passed your driving test.

Q33 At what speed do you think you would choose to drive in this road situation?

miles per hour (*please enter the speed*)

29

Q34 The following statements describe various behaviours related to your sleep habits. For each statement decide how often you engage in the behaviours described and place a tick in the appropriate box on the scale.

	Never	Rarely	Sometimes	Frequently	Always
I go to bed at a regular time at night	☐1	☐2	☐3	☐4	☐5
I use medication (prescription or 'over the counter' remedies) to aid my sleep	☐1	☐2	☐3	☐4	☐5
When I am in bed, I find myself worrying or thinking about things in my life	☐1	☐2	☐3	☐4	☐5
I get out of bed at a regular time after sleeping	☐1	☐2	☐3	☐4	☐5
I sleep in a bed that is uncomfortable	☐1	☐2	☐3	☐4	☐5
I get woken by an alarm rather than waking up 'naturally' in the mornings	☐1	☐2	☐3	☐4	☐5
I drink alcohol or smoke tobacco within four hours of going to bed	☐1	☐2	☐3	☐4	☐5
I do important work just before going to bed (e.g. paperwork, bills)	☐1	☐2	☐3	☐4	☐5
I watch TV in bed immediately before going to sleep	☐1	☐2	☐3	☐4	☐5
I have a relaxing 'routine' before going to bed (e.g. quietly reading a book, or having a bath)	☐1	☐2	☐3	☐4	☐5
I eat a light snack within one hour of going to bed	☐1	☐2	☐3	☐4	☐5

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Q35 The following statements also describe various behaviours related to your sleep habits. For each statement decide how often you engage in the behaviours described and place a tick in the appropriate box on the scale.

	Never	Rarely	Sometimes	Frequently	Always
I go to bed feeling stressed, angry, upset or nervous	☐₁	☐₂	☐₃	☐₄	☐₅
I sleep in a bedroom that is too light, too hot, too cold, or too noisy	☐₁	☐₂	☐₃	☐₄	☐₅
I use a computer or games console (e.g. using the internet, or playing video games) within one hour of going to bed	☐₁	☐₂	☐₃	☐₄	☐₅
I have a night time drink (e.g. Horlicks, Ovaltine) before going to bed	☐₁	☐₂	☐₃	☐₄	☐₅
I take daytime naps lasting two hours or more	☐₁	☐₂	☐₃	☐₄	☐₅
I have drinks with caffeine (e.g. tea, coffee, or caffeine-containing energy drinks) within four hours of going to bed	☐₁	☐₂	☐₃	☐₄	☐₅
I do strenuous exercise within one hour of going to bed	☐₁	☐₂	☐₃	☐₄	☐₅
I eat a large meal within one hour of going to bed	☐₁	☐₂	☐₃	☐₄	☐₅

Please complete the following information

Approximate time you go to bed ☐ : ☐ AM/PM

Approximate time you get up ☐ : ☐ AM/PM

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Below is a series of pictures. Each picture depicts an oncoming vehicle getting closer to you.

Q36   Imagine that you have passed your driving test, and you have been behind the car depicted below for 15 minutes, driving at 20mph, and want to overtake. The oncoming vehicle speed is 35mph. Please tick the picture that indicates the MOST RISKY overtaking situation you think you would tolerate.

Would NOT Overtake Anywhere

Learner driver questionnaire - 1

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CPR1515

As you will be aware, transport has a major impact on the environment through CO2 emissions, and road transport is no exception to this.

Q37　In the box below, we would like you to list things you believe that you can do WHEN DRIVING to reduce the environmental impact of your vehicle use.

Thank you for completing this questionnaire.

Please post it back to us in the envelope provided. As we have a Freepost address, you do not need to use a stamp.

You may complete your claim form and post it back at the same time.

Appendix F Orders of online questionnaire

There were four versions of the online questionnaire, which varied according to the set of video hazard perception clips used (set 1, set 2 – both sets contain six clips), the set of adaptation pictures used (pictures 1 to 10, pictures 11 to 20), and the order in which the adaptation pictures were seen (easy scenes first, hard scenes first). The versions were:

1. Version 1: Set 1 HP clips, adaptation pictures 1 to 10, easy scenes first

2. Version 2: Set 1 HP clips, adaptation pictures 1 to 10, hard scenes first

3. Version 3: Set 2 HP clips, adaptation pictures 11 to 20, easy scenes first

4. Version 4: Set 2 HP clips, adaptation pictures 11 to 20, hard scenes first

Full details of the adaptation test can be found in de Craen et al. (2008). Participants give speed ratings (the speed they would drive at in the scene depicted) to each picture of the test. Each scene is presented twice – once in an 'easy' version and once as a 'hard' version (with a specific hazard that had not been present in the 'easy' scene). The test works by assessing the degree to which respondents are sensitive to the presence of the hazards in the 'hard' scenes, through their speed estimates. If they are sensitive to the presence of the hazard then they should give lower speed estimates in the hard version of each scene, compared to the easy version.

To avoid repetition of adaptation test pictures and hazard perception clips between the two time points in the study, participants viewed different sets between the two time points, as follows:

	Time Point 1	Time Point 2
Participant type A	Version 1	Version 3
Participant type B	Version 2	Version 4
Participant type C	Version 3	Version 1
Participant type D	Version 4	Version 2

This was done as these were the only items within the questionnaire battery that could be said to measure some aspect of 'skill', and as such would be potentially subject to learning effects. All other items within the online questionnaire measured self-report attitudes and behavioural tendencies, and were repeated between the 'early' and 'late' time points.